

2nd PLACE

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Equipping Students to Change the Future

“Ignorance is bliss,” the saying goes. Children can live cheerfully without the burden of knowing the negative things happening in the world. However, there comes a time when they must abandon naiveté and learn about all the problems that need fixing. While this may sound grim, receiving this education is crucial. If everyone chooses to remain ignorant, no one will find solutions for urgent issues. One issue is climate change. Despite the gravity of climate change, the Idaho State Legislature removed it from public school science standards in March of 2017, denying thousands of students access to powerful education with which they can change the world. The Idaho State Legislature should include climate change in the Idaho State Science Standards for public schools because it is caused by human activities that are adversely affecting the environment and human life.

Primarily, students should learn about climate change because it is the result of human activities. Climate change is an alteration in global climate patterns resulting from increased carbon dioxide emissions. Kennedy Elliot and other members of the *National Geographic* Magazine staff explain, “...CO₂ and other human-emitted greenhouse gases have gone steadily up, forming a thickening blanket that traps heat at the Earth’s surface.” The scientific consensus for climate change serves as evidence for this. According to the National Aeronautics and Space Administration (NASA), “Ninety-seven percent of climate scientists agree that climate-warming

trends over the past century are very likely due to human activities...” Many believe volcanic and solar activity change the climate naturally. While these are a factor in changing climate over thousands of years, they fail to account for such abrupt global warming. Science writers for the National Oceanic and Atmospheric Administration (NOAA), Michon Scott and Rebecca Lindsey, state, “Human activities emit 60 or more times the amount of carbon dioxide released by volcanoes each year....several individual U.S. states emit more carbon dioxide in a year than all the volcanoes on the planet combined...” Humans are responsible for climate change, as well as its consequences.

The first and most obvious effect of climate change is the difference in weather. Initially, it contributes to rising global temperatures. Earth’s average surface temperature is two degrees Fahrenheit higher than it was in the late 1800s, “...with 16 of the 17 warmest years on record occurring since 2001” (NASA). Also, climate change causes more severe weather. “Worldwide, the number of climate-related disasters have more than tripled since 1980” (Elliot et al.). Global warming significantly influence aspects of the environment, one of which is land and sea ice.

Rising temperatures lead to melting ice. First, Arctic ice is vanishing at alarming rates. “Every ton of CO₂ we emit melts 32 square feet of Arctic ice...which means the average American melts 525 square feet a year” (Elliot et al.). Also, land ice is melting, including permafrost and glaciers. The National Snow and Ice Data Center says that since the early 20th century, the amount of permafrost in the Northern Hemisphere decreased 10% (about two million square miles). Thawing permafrost can release carbon dioxide, raise sea levels, and cause landslides. According to the United States Geological Survey, while around 150 bodies of ice

larger than 25 acres were in Glacier National Park in 1850, there were only 26 glaciers over 25 acres in size in 2015. Runoff from this melted ice in turn influences ocean levels.

Climate change also affects oceans. The rapid rise of sea levels shows how drastically oceans are altered. As Rebecca Lindsey observes, "In 2016, global sea level was 3.2 inches (82 mm) above the 1993 average – the highest annual average in the satellite record (1993-present)," while "The pace of global sea level rise doubled from 1.7 mm/year throughout most of the twentieth century to 3.4 mm/year since 1993." Additionally, the ocean's acidity escalates as it absorbs carbon dioxide released by humans. Surface ocean waters are 30% more acidic than they were at the beginning of the Industrial Revolution (NASA). The effects of climate change on the Earth are varied and drastic.

The impact on the planet disrupts American life. Higher ocean levels bring more frequent flooding. The NOAA writes, "In the United States, almost 40 percent of the population lives in relatively high-population-density coastal areas, where sea level plays a role in flooding, shoreline erosion, and hazards from storms." In the past 50 years, nuisance flooding became three to nine times more frequent in the United States, causing public inconvenience and expense (NOAA). This increase in flooding is more than disruptive, especially during storms and hurricanes. "During Superstorm Sandy...floods and winds caused \$68 billion in damage along the U.S. East Coast" (Elliot et al.). Climate change affects agriculture as well. The U.S. Global Change Research Program found that higher temperatures and extreme weather events introduce pathogens and toxins into food, leading to outbreaks of foodborne illness. Furthermore, "Higher concentrations of CO₂ stimulate carbohydrate production and plant growth, but can lower the levels of protein and essential minerals in a number of widely consumed crops, including wheat,

rice, and potatoes..." (USGCRP). Climate change is costly and threatens the infrastructure of the country.

Climate change also takes a serious toll on human health. One example is a potential increase in vector-borne diseases. Rising temperatures affect the prevalence, seasonality, and distribution of vectors such as mosquitoes and ticks. This can multiply cases of Lyme disease, West Nile virus, and other vector-borne diseases (USGCRP). Additionally, global warming harms human health through heat waves, drought, and wildfires. A heat wave as deadly as the one in 2003 that killed 70,000 people in Europe should take place once every 500 years. Scientists now predict such an event occurring every 40 years due to current climate changes (Elliot et al.). "Climate change has already led to an increased frequency of large wildfires, as well as longer durations of individual wildfires and longer wildfire seasons in the western United States" (USGCRP). Wildfires not only destroy homes and property but worsen air quality, resulting in adverse cardiovascular and respiratory health outcomes. The negative impacts of climate change on human health are extensive, ranging from short-term illness to long-term health problems.

Human activities are wreaking havoc on the Earth and our way of life. While ignorance may seem desirable in the short-term, it will eventually kill us. Teaching Idaho students about climate change equips them to face the issue and search for solutions. Humans created this problem, so we must fix it. Now is the time to look to a better future by making climate change part of the Idaho State Science Standards for public schools. Ignorance brings no bliss; once we find a solution to climate change, we can truly celebrate.

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