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Climate Justice in Engineering Education

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DURI Abstract - Climate Justice In Engineering Education

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Abstract

The goal of this research is to design a learning module for Purdue first-year engineering (FYE) students to learn climate fundamentals, and the role of engineers in responding to climate justice challenges. There is a lack of climate material within these classes currently, leading to a lack of climate conscious engineers in the future. The project entailed reviewing and synthesizing a wide variety of previous research on climate change education in engineering, including key learning objectives and their assessment. Because one of the key foci of the first-year engineering sequence relates to data analysis and management, we focused our work on identifying climate data sets compatible with current curricular materials and application tools in the course. We designed a module to fit within the learning targets of ENGR 132, while also including new learning targets identified in previous research that could be easily implemented within the guidelines of ENGR 132. Climate data forms a useful example of the kinds of complex data management challenges engineers face now and in the future. In particular, the problem of climate change reveals structural inequities that engineers must address in their design of solutions. Climate change is one of the grand socio-technical challenges of our day, and thus has the potential to engage many FYE students in discovering how different disciplines of engineering (and disciplines beyond engineering) can contribute to climate solutions. The module will be delivered to a key faculty member in Engineering Education for further development and implementation in the course.

Keywords: Climate Justice, Education, Engineering, Climate Change