

The Climate Change Curriculum Challenge: *Crowdsourcing novel topics in climate change science education from current secondary educators.*

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Introduction

Climate Change has been called by some the most significant challenge facing civilization in the 21st century with the agriculture industry playing a central role, yet how will we engage the problem solvers of tomorrow? The United States Department of Agriculture reported climate change is likely to diminish continued progress on global food security through production disruptions that lead to local availability limitations and price increases, interrupted transport conduits, and diminished food safety, among other causes (Brown et al, 2015). Some studies have suggested beginning with children to reverse the change in attitudes towards climate change education, and while children tend to be more receptive to climate change messages than adults (Valdez et al., 2018), educating young Americans will take a concerted effort on the parts of the agriculture industry, elementary, middle and high school education systems as well as the systems of higher education that oversee teacher training (Burrows et al., 2020). Supporting awareness of local and global political and ecological issues will help students realize how to fix problems and implement sustainable measures (Wenger, 1998). Before students can explore plausible routes to mitigate the risk of climate change, they must be taught the strategies needed to solve climate change science problems and the scope of climate change science by educators who have a level of concern on the topic and who possess the tools to deliver progressive inquiry-based curriculum. Bella & Dyer (2009) however, found that teachers who had been introduced to a curriculum, but had not received training in this innovation, expressed lower in their stages of concern, but also found that teachers who had experience with the curriculum ranked higher in their stages of concern. The Climate Change Curriculum Challenge was implemented to extend the professional development experience for participants in the Climate Literacy for Agriculture and Sustainable Societies (CLASS) conference and empower educators to both build curriculum resources and receive coaching to utilize novel curriculum resources to prepare students to address issues in climate change science. The University of Tennessee Martin in partnership with the Global Teach Ag Network at Penn State University launched the CLASS initiative. Funded by a grant through the United States Department of Agriculture, both content presented during CLASS as well as the Climate Change Curriculum Challenge are tied to UN Sustainable Development Goal #13: Climate Action (Desa, 2016).

How it works

The goal of the Climate Change Curriculum Challenge was to use a crowd-sourcing method for building a library of educator resources on the topic of climate change science education. Participants in the CLASS conference worked in groups of five to complete the challenge. The Climate Change Curriculum Challenge was comprised of two parts (1) the pitch and (2) the product. The pitch was in a lightning-style presentation where participants were tasked with composing a two-minute presentation to a panel of judges with the intent of discussing what each group would choose as the theme and composition of their final curriculum product with the judging panel providing feedback for each group going forward. The pitch guidelines included three distinct elements: (A) sharing the topic, (B) making a local connection to climate change science, and (C). each member of the group detailing activities for the curriculum package.

The product included three elements as well: (A) a lesson plan, (B) a lab activity, and (C) a summative assessment. Length of the curriculum was guided by a need for a week-long

immersion into a topic that any educator wishing to discuss climate change science could pick up and integrate in their classroom. Completed curriculum resources were turned in through a portal on the University of Tennessee Martin website and reviewed by the judges for feedback. The final packages were compiled and uploaded to the University of Tennessee website for use by any educator wishing to take advantage of the library of content built by the crowd-sourced packages.

Results to Date

Participants in the Climate Change Curriculum Challenge (N=16) began their experience by first attending the CLASS conference where climate change science experts shared perspectives and dialogue on where the state of climate change science education is and where educators at the secondary level fit into the role of advancing climate change science education. Participants were then tasked with selecting the topic for the challenge of the pitch and the product. Topics from the teams included: water management, food systems, and clothing manufacturing. These presentations were reviewed by the judges for appropriateness and potential for use by fellow educators. Ten days post-conference, each team submitted a final curriculum resource (the product) that had both a unique connection to local context, but also a global connection as well that provided avenues for further study beyond US borders.

Future Plans

Given the success of the first iteration of the challenge, a similar program will potentially be used at a 2022 national event where teams of educators will be formed by region, and the topics will fall under the umbrella of food security, dependent upon acquisition of external funding. The team believes that the homophily found in the regional context is vital for relevance of the content and educator interest. Future research will focus on investigating educator motivation for participation in activities that use topics of regional significance but also connect to key global issues like climate change and food security. There is a need for enhanced climate change education (Boyko et al., 2021) that also connects with the global systems that interact with food, fiber, and natural resources. The challenge presents two significant opportunities for the agricultural education profession, (1) evidence for potential of building an open access library of resources from educators with diverse perspectives in climate science and agriculture, and (2) increasing the relevance of regional issues for motivating engagement in global issues.

Resources Needed

Items	Notes/Description	Unit Cost	Qty.	Total
Judging Honorarium	Honorarium for each of the 2 reviewers of the presentations and curriculum packages.	\$100	2	\$200
Event Completion Incentive	A complimentary digital registration to a future professional learning event	\$25	16	\$400
Platform for Online Conference	Appropriate Learning Management System for on-demand and live collaboration	\$2000	1	\$2000
			Total	\$2600

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