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STEM Learning in Context: Opportunities and Challenges from Climate Science and Engineering

Author(s)

Richard A. Duschl

Description

This paper by Richard A. Duschl from Penn State University was presented at the Climate Change Education Partnership Workshop in Washington DC, October 18-19, 2011. The paper provides an overview of recent developments in the geosciences and geographical sciences and in the learning sciences to set out implications for the design of climate change and engineered systems education models.

Abstract

The paper provides an overview of recent developments in the geosciences and geographical sciences and in the learning sciences to set out implications for the design of climate change and engineered systems education models. Current educational contexts such as the *Next Generation Science Standards* and the recently published 'Geoscience Literacy' introduce perspectives on secondary and postsecondary STEM education and STEM education policies and practices.

A review of 'learning sciences' serves to segue into a new frontier in STEM education research – learning progressions. Learning progressions provide a viable context and mechanism for advancing 'Engineering in Earth Systems' STEM curriculum, instruction, and assessment models. That is, climate change education projects

should adopt a Learning Progressions perspective on developing curriculum, instruction, and assessment models. Climate science and engineered system contexts in local, regional, as well as national domains represent an extremely rich and motivating forum for STEM education and STEM policy education. The research agenda will be complex given the new images we have of science, of capable young learners, of science and engineering participatory practices and of the importance of context when motivating the understanding and evaluation of climate science knowledge and engineered systems.

Body

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