

Abstract of Nanotechnology Ethics and Policy Education: Learning and Sharing Across Boundaries

This case study of the emergence and expansive adaptation of the ethics education component of the National Nanotechnology Initiative (NNI) begins with a brief overview of nanotechnology as a U.S. federal policy initiative. As one of its contributions to this cross-cutting federal program, the National Science Foundation established the Nanotechnology Undergraduate Education (NUE) Program “to integrate nanoscale science, engineering, and technology into the undergraduate engineering curricula.”

Taking up the challenge, an interdisciplinary faculty team of more than 20 members (from the disciplines of Africa and African American Studies, Cultural Studies, Communications, Education, English, Geography, History, International Relations, Law, Philosophy, Political Science, and Sociology) at the Colorado School of Mines (CSM) seeks to broaden nano-ethics to include nano-policy. The resulting Nano-Science, Technology, Ethics, and Policy (NanoSTEP) project introduces boundary-crossing societal, ethical, economic, and environmental (S3E) issues at multiple levels in humanities and social sciences course requirements. In so doing, NanoSTEP aims to graduate more effective contributors to 21st century engineering practice in accord with an ideal proposed by the National Academy of Engineering in its reports on “The Engineer of 2020.” NanoSTEP further seeks to better understand the effectiveness and influence of ethics and policy learning in the undergraduate engineering curriculum, using nanotechnology as a framework. In complement to this educational research, NanoSTEP is also examining relationships between emerging technologies and underrepresented populations, with respect to the potential for environmental and social justice deficiencies, both in access to opportunities for research and education and in regard to benefitting from nano-R&D.

Published in the Journal of Nano Education, the full paper “Nanotechnology ethics and policy education: learning and sharing across boundaries” may be found at <http://dx.doi.org/10.1166/jne.2013.1038>. Another project paper is forthcoming.

The NanoSTEP project is comprised of several components that may be found in the Mines Institutional Repository (<http://publish.mines.edu>):

Overview of Project Plan (poster)

NanoSTEP: nano-science, technology, ethics and policy
<http://hdl.handle.net/11124/16996>

Module Part One

Nature and human values
<http://hdl.handle.net/11124/16998>

Module Part Two

Human systems
<http://hdl.handle.net/11124/16997>

Presentation

Nanotechnology, ethics and policy education: research and pedagogy
<http://hdl.handle.net/11124/16999>