

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Development and assessment of research-based tutorials on heat engines and the second law of thermodynamics¹ PAULA HERON, MATTHEW COCHRAN, University of Washington — The Physics Education Group has been investigating student ability to apply the second law of thermodynamics to cyclic devices such as heat engines and refrigerators. Students enrolled in courses ranging from algebra-based introductory physics to a junior-level thermodynamics course were asked if certain specified processes could occur. Their responses revealed several conceptual difficulties, including the failure to recognize the relevance of the second law to various problems. These findings informed the development of two tutorials to supplement instruction in standard undergraduate courses. Student performance on examination questions indicates that both tutorials can help improve understanding.

¹With support from NSF.

Paula Heron
University of Washington

Date submitted: 30 Nov 2006

Electronic form version 1.4