



NSF Award Abstract - #0311450

Active-Learning Curricular Materials for Fully Interactive Physics Lectures

NSF Org DUE

Initial Amendment Date September 8, 2003

Latest Amendment Date September 8, 2003

Award Number 0311450

Award Instrument Standard Grant

Program Manager Duncan E. McBride

DUE Division of Undergraduate Education

EHR Directorate for Education & Human Resources

Start Date September 15, 2003

Expires August 31, 2006 (Estimated)

Awarded Amount to Date \$59926

Investigator(s) David Meltzer dem@iastate.edu(Principal Investigator)

Sponsor Iowa State University

1138 Pearson Hall

Ames, IA 50011 515/294-5225

NSF Program(s) CCLI-ADAPTATION AND IMPLEMENTA

Field Application(s) 0000099 Other Applications NEC,
0116000 Human Subjects

Program Reference Code(s) SMET,9178

Program Element Code(s) 7428

Abstract

Physics (13) The goal of this project is to develop and test new curricular materials for the introductory physics course that are to be used in large lecture classes. They are adaptations and modifications of Mazur's ConcepTests, and consist of carefully sequenced sets of multiple-choice questions, each focused on a specific topic. These are primarily conceptual questions which downplay algebraic manipulations, and are designed to be used in the context of a class organized along active-learning lines in which a classroom communication system is available. Intellectual Merit: This project contributes to the development of active-learning curricular materials for large-enrollment physics lecture classes. The strategically sequenced question sets represent a specific type of modification and adaptation of ConcepTests that have only been available in substantial quantities from the previous work of the Principal Investigator and his collaborators. Broader Impacts: This project has among its goals (1) develop research-based educational materials and creation of a database (of student response frequencies) useful in teaching; (2) involve graduate researchers in undergraduate teaching activities; (3)

participate in developing new approaches (e.g., use of interactive lecture instruction) to engage underserved individuals and groups (i.e., female physics students); (4) make data available in a timely manner by means such as CD-ROMs; (5) publish in diverse media (e.g., websites and CD-ROMs) to reach broad audiences; (6) integrate research on teaching and learning with education activities in order to communicate in a broader context, and (7) benefit society by increasing the effectiveness of undergraduate physics instruction.

Please report errors in award information by writing to: award-abstracts-info@nsf.gov.