NSF Award Abstract - #9354595

Introductory Physics: A Pilot Project for an Elementary Course based on Guided inquiry,with the Theme of "Energy"

NSF Org	DUE
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Award Instrument	Standard Grant
Program Manager	Kenneth S. Krane DUE DIVISION OF UNDERGRADUATE EDUCATION EHR DIRECT FOR EDUCATION AND HUMAN RESOURCES
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Investigator	David E. Meltzer (Principal Investigator current)
Sponsor	Southeastern Louisiana U 100 West Dakota Hammond, LA 704012512 504/549-2000
NSF Program	7348 TEACHER PREPARATION PROGRAM
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Abstract

9354595 Meltzer Undergraduate science courses taken by preservice teachers typically have textbook-centered lecture formats. There is a need for new course designs which implement ideas found beneficial in recent educational research. It is essential that pilot forms of the courses be offered, tested and evaluated, and that reports of the successes and problem areas of such courses be widely disseminated.This proposal is for a pilot project to develop, implement, and assess an elementary physics course, appropriate for preservice teachers, which would embody a number of the recent innovations in educational theory and practice. Among the problems which need to be investigated is the question of just how severely the breadth of topical coverage will have to be reduced from standard levels, in order to ensure that what is covered is actually learned and retained by the students.The theme of "energy" is used as a conceptual pivot to tie together the various topics. Students' pre/misconceptions regarding physical phenomena will guide the presentation, activities, and discussion. After pretesting to determine student preconceptions, issues related to their preconceived ideas will be investigated by the students through guided "mini-research-projects." These projects will be carried out by the students working in small groups; discussions centered around

each group's results will lead to a systematic summing-up by the instructor to provide perspective, and tie into the next topical area with the thread of the theme "energy transformation and conservation." During course delivery, ongoing testing and other assessment will guide the pacing and depth of the topical coverage.The target audience is prospective elementary and middle-school teachers, and other non-technical students. The project has the potential to significantly improve the knowledge of and attitude towards physics on the part of those whose typical experience with college physical science tends to be dist asteful and nonproductive.
