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Robust assessment instrument for student problem solving

JENNIFER DOCKTOR, Kenneth Heller, Patricia Heller, University of Minnesota

Abstract:

Traditional physics grading systems that assess the correctness of solution steps give an incomplete description of a student's skill at solving problems. A more detailed and meaningful measure is desirable both for research in education and for use by physics instructors. A version of an assessment instrument has been developed at Minnesota in the form of a rubric, which evaluates students' written solutions to physics problems across multiple scales (Tom Foster, unpublished doctoral dissertation). Each category of the rubric is subdivided into levels designated by a numerical "score" and a description of the criteria met to attain that score. I will report on the scales and criteria levels of the rubric, as well as results for initial tests of validity and reliability.