

Abstract Submitted
for the APR12 Meeting of
The American Physical Society

Learning Physics from the Real World by Direct Observation

SAAMI J. SHAIIBANI, Instruction Methods, Academics & Advanced Scholarship (IMAAS) — It is axiomatic that hands-on experience provides many learning opportunities, which lectures and textbooks cannot match. Moreover, experiments involving the real world are beneficial in helping students to gain a level of understanding that they might not otherwise achieve. One practical limitation with the real world is that simplifications and approximations are sometimes necessary to make the material accessible; however, these types of adjustments can be viewed with misgiving when they appear arbitrary and/or convenience-based. The present work describes a very familiar feature of everyday life, whose underlying physics is examined without modifications to mitigate difficulties from the lack of control in a non-laboratory environment. In the absence of any immediate formula to process results, students are encouraged to reach ab initio answers with guidance provided by a structured series of worksheets. Many of the latter can be completed as homework assignments prior to activity in the field. This approach promotes thinking and inquiry as valuable attributes instead of unquestioningly following a prescribed path.

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Date submitted: 20 Dec 2011

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