



Workbook for Introductory Physics

 Indicates a research-demonstrated benefit

Overview

Sequences of multiple-choice questions that emphasize qualitative reasoning and multiple representations. For interactive discussion in lecture.



Type of Method

Instructional strategy, Curriculum supplement



Level

Designed for: Intro College Algebra-based 

Can be adapted for: Teacher Professional Development, High School, Intro College Calculus-based, Intermediate



Setting

Designed for: Lecture - Large (30+ students) 

Can be adapted for: Lecture - Small (<30 students), Recitation/Discussion Session, Studio



Coverage

Few topics with great depth



Topics

Electricity / Magnetism, Waves / Optics, Modern / Quantum



Instructor Effort

Medium




Resource Needs

Flash cards





Skills


Designed for: Conceptual understanding  , Using multiple representations 




Can be adapted for: Problem-solving skills, Metacognition



Research Validation

Based on research into: theories of how students learn  , student ideas about specific topics 


Demonstrated to improve: conceptual understanding 

Studied using: student interviews  , classroom observations  , research at multiple institutions 



Compatible Methods

[Peer Instruction](#), [PhET](#), [UW Tutorials](#), [JiTT](#), [Ranking Tasks](#), [ILDs](#), [CGPS](#), [Physlets](#), [Context-Rich Problems](#), [RealTime Physics](#), [TIPERs](#), [ABP Tutorials](#), [SCALE-UP](#), [OSP](#), [SDI Labs](#), [OST Tutorials](#), [Thinking Problems](#), [LA Program](#), [CAE TPS](#), [MBL](#), [CPU](#), [SCL](#), [TEFA](#), [Tools for Scientific Thinking](#), [Tutorials](#), [Clickers](#)

 **Similar Methods** [Peer Instruction](#), [CAE TPS](#), [TEFA](#), [PI QM](#)

 **Developer(s)** David E. Meltzer and Kandiah Manivannan

 **Website** <http://physicseducation.net>

 **Intro Article** 2780

 **Intro Article** [Transforming the lecture-hall environment: The fully interactive physics lecture](#)