



## 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](#)