Interactive Lecture Demonstrations

Overview

Worksheets for use in lecture. Students predict results of demos, discuss in small groups, observe results, compare with predictions and explain.

Type of Method

Instructional strategy, Curriculum supplement

Level

Designed for: Intro College Calculus-based 🏛, Intro College Algebra-based 🏛
Can be adapted for: High School

Setting

Designed for: Lecture - Large (30+ students) 🏛
Can be adapted for: Lecture - Small (<30 students), Studio

Coverage

Many topics with less depth

Topics

Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical

Instructor Effort

Low

Resource Needs

Cost for students, Laboratory equipment for instructor to do demonstrations, but not laboratory equipment for all students

Skills

Designed for: Conceptual understanding 🏛, Using multiple representations

Research Validation

Based on research into: theories of how students learn 🏛, student ideas about specific topics 🏛
Demonstrated to improve: conceptual understanding 🏛
Studied using: research at multiple institutions 🏛, research by multiple groups 🏛, peer-reviewed publication 🏛

Compatible Methods

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

Similar Methods

Peer Instruction, RealTime Physics, Workshop Physics, CAE TPS, MBL, TEFA, Tools for Scientific Thinking
Resources, training, & community

Guide: SERC Guide to ILDs

Articles about ILDs:

- Manjula D. Sharma et al., Use of interactive lecture demonstrations: A ten year study, Physical Review Special Topics - Physics Education Research 6, no. 2 (October 8, 2010): 020119.
- Ron Thornton, Web-delivered interactive lecture demonstration: Creating an active science learning environment over the Internet, Forum on Education of the American Physical Society, Fall 2003.
- Interactive Lecture Demonstrations, in E. F. Redish, Teaching Physics with the Physics Suite (2003), pp. 135-137.

Workshops:

The developers of ILDs regularly offer in-person workshops, with dates regularly updated on their website.