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.