Technology-Enhanced Formative Assessment

Indicates a research-demonstrated benefit

Overview

A pedagogy for using clickers to accomplish highly interactive, student-centered science instruction, focusing on using provocative, meaty questions to engage students in extended whole-class discussion as a context and vehicle for learning.

Type of Method	Instructional strategy
Level	**Designed for:** Pretty much anything, especially (but not only) for larger class sizes.
Setting	**Designed for:** Lecture - Large (30+ students) **Can be adapted for:** Lecture - Small (<30 students) , Studio , Recitation/Discussion Session, Lab
Coverage	Few topics with great depth, Many topics with less depth
Topics	Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical, Modern / Quantum, Mathematical, Astronomy, Other Science
Instructor Effort	Medium
Resource Needs	Clickers, Projector in class
Skills	**Designed for:** Conceptual understanding of physics content , Connecting conceptual and mathematical understanding , Understanding how physics relates to the real world **Can be adapted for:** Enjoyment of physics , Problem-solving skills, Think like a scientist, Reflecting on one's own learning
Research Validation	**Based on research into:** how students learn **Studied using:** student interviews , classroom observations , research conducted 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, Workbook for Introductory Physics, LA Program, CAE TPS, Lecture-Tutorials, Astro Ranking Tasks, MBL, CPU, SCL, CU Modern, CU E&M, CU QM, QuILTs, Paradigms, Tools for Scientific Thinking, PI QM, M&I, Tutorials, Clickers, MOP, Responsive Teaching
Similar Methods	Peer Instruction, ILDs, Workbook for Introductory Physics, CAE TPS, PI QM, Clickers
Developer(s)	Ian D. Beatty & William J. Gerace
Intro Article	11261
Intro Article	Technology-enhanced formative assessment: A research-based pedagogy for teaching science with classroom response technology

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