Workshop Physics

Indicates a research-demonstrated benefit

Overview

A calculus-based introductory physics curriculum designed to completely replace traditional lectures and laboratories with sequenced activities. In a typical two-hour Workshop Physics class session, students work in groups of 3 or 4 to make and discuss predictions and then use equipment and computer tools for simple observations, data acquisition, visualization, analysis, and mathematical modeling.

Type of Method	Full curriculum, Classroom structure
Level	**Designed for:** Intro College Calculus-based **Can be adapted for:** High School , Intro College Algebra-based, (Explorations in Physics uses the Workshop Physics style of guided inquiry but it designed for use in non science major classes)
Setting	**Designed for:** Studio **Can be adapted for:** Lecture - Small (<30 students) , Lab
Coverage	Many topics with less depth, The topic coverage has been reduced by about 15% so it is between broad and deep.
Topics	Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical, Modern / Quantum
Instructor Effort	Medium
Resource Needs	Teaching Assistants / Learning Assistants, Projector in class, Computers for student use in class, Computers for student use outside of class, Lab equipment for student use - professional, Cost for students, Tables arranged for group work
Skills	**Designed for:** Conceptual understanding of physics content , Connecting conceptual and mathematical understanding , Coherent framework for physics , Self-confidence around physics , Enjoyment of physics , Laboratory skills , Representing knowledge in multiple ways , Designing experiments , Think like a scientist, Creativity, collaborative skills **Can be adapted for:** Autonomy , Problem-solving skills, Reflecting on one's own learning

Research Validation	**Based on research into:** how students learn , student ideas about specific topics **Demonstrated to improve:** scores on multiple choice conceptual tests , beliefs about physics , attitudes about physics , laboratory skills , retention of students **Studied using:** conceptual pre/post exams , beliefs pre/post exams , student interviews , research conducted at multiple institutions
Compatible Methods	PhET, JiTT, ILDs, Physlets, SCALE-UP, OSP, LA Program, MBL, CPU, RealTime Physics, Responsive Teaching
Similar Methods	SCALE-UP, MBL, EiP, ILDs, RealTime Physics
Developer(s)	Priscilla Laws with contributions from Robert Boyle, Patrick Cooney, Kenneth Laws, John Luetzelschwab, David Sokoloff and Ronald Thornton
Website	http://physics.dickinson.edu/~wp_web/wp_homepage.html