SCALE-UP

🎓 Indicates a research-demonstrated benefit

Overview

An integrated learning environment in which the space is carefully designed to facilitate interactions between teams of students who work on short, interesting tasks. Students work in small groups around round tables on hands-on activities, questions, simulations, or laboratories. All course components are mixed together; there is no separate lab class and most of the "lectures" are actually class-wide discussions.

Type of Method	Classroom structure
Level	**Designed for:** Teacher Preparation 🎓 , High School 🎓 , Intro College Calculus-based 🎓 , Intro College Algebra-based 🎓 , Astronomy 🎓 , Teacher Professional Development, Intro College Conceptual, Intermediate Undergraduate, Other Science
Setting	**Designed for:** Studio 🎓
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	High
Resource Needs	Studio classroom
Skills	**Designed for:** Problem-solving skills 🎓 , Conceptual understanding of physics content 🎓 , Reflecting on one's own learning 🎓 , Self-confidence around physics 🎓 , Enjoyment of physics 🎓 , Laboratory skills 🎓 , Representing knowledge in multiple ways 🎓 , Designing experiments 🎓 , Connecting conceptual and mathematical understanding, Coherent framework for physics, Understanding how physics relates to the real world, Think like a scientist, working in groups

Research Validation

Based on research into: how students learn

Demonstrated to improve: scores on multiple choice conceptual tests , scores on written conceptual tests , traditional problem-solving ability , beliefs about physics , metacognitive skills , laboratory skills , retention of students

Studied using: conceptual pre/post exams , beliefs pre/post exams , student interviews , classroom observations , video of students , research conducted at multiple institutions

Compatible Methods

Peer Instruction, PhET, UW Tutorials, JiTT, Ranking Tasks, CGPS, Physlets, Context-Rich Problems, RealTime Physics, Workshop Physics, TIPERs, ABP Tutorials, Modeling, OSP, SDI Labs, OST Tutorials, ISLE, Thinking Problems, Workbook for Introductory Physics, LA Program, PBI, PET, PSET, LEPS, Astro Ranking Tasks, MBL, New Model Course, CPU, SCL, TEFA, CU Modern, CU E&M, CU QM, QuILTs, IQP, Thermal Tutorials, Mechanics Tutorials, Energy Project, SGSI, Paradigms, PUM, EiP, Tools for Scientific Thinking, PI QM, M&I, Tutorials, Clickers, ILDs, CAE TPS, MOP, Responsive Teaching

Similar Methods

Workshop Physics, EiP

Developer(s)

Robert Beichner

Website

http://scaleup.ncsu.edu/