



Cooperative Group Problem-solving

Indicates a research-demonstrated benefit

Overview

Students work in small groups using structured problem-solving strategy to solve complex context-rich problems that are too difficult for any one student to solve individually.



Type of Method

Instructional strategy



Level

Designed for: Intro College Calculus-based
Can be adapted for: Any



Setting

Designed for: Recitation/Discussion Session
Can be adapted for: Lecture - Small (<30 students), Studio



Coverage

Many topics with less depth



Topics

Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical, Modern / Quantum, Mathematical, Astronomy, Other Science



Instructor Effort

Medium



Resource Needs

Tables arranged for group work



Skills

Designed for: Problem-solving skills , Conceptual understanding of physics content , Connecting conceptual and mathematical understanding, Understanding how physics relates to the real world, Group work
Can be adapted for: Coherent framework for physics, Think like a scientist, Self-confidence around physics, Enjoyment of physics, Representing knowledge in multiple ways



Research Validation

Based on research into: how students learn , student ideas about specific topics
Demonstrated to improve: scores on multiple choice conceptual tests , traditional problem-solving ability
Studied using: conceptual pre/post exams , problem-solving pre/post exams , classroom observations



**Compatible
Methods**

[Peer Instruction](#), [PhET](#), [UW Tutorials](#), [JiTT](#), [Ranking Tasks](#), [ILDs](#), [Physlets](#), [Context-Rich Problems](#), [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](#), [New Model Course](#), [CPU](#), [SCL](#), [TEFA](#), [CU Modern](#), [CU E&M](#), [CU QM](#), [QuILTs](#), [IQP](#), [Thermal Tutorials](#), [Mechanics Tutorials](#), [Paradigms](#), [PI QM](#), [M&I](#), [Tutorials](#), [Clickers](#), [RealTime Physics](#), [Tools for Scientific Thinking](#), [MOP](#), [Responsive Teaching](#)



**Similar
Method**

[Context-Rich Problems](#)



Developer(s)

University of Minnesota Physics Education Research Group



Website

<http://groups.physics.umn.edu/phyped/Research/CGPS/CGPSintro.htm>