



## Cooperative Group Problem-solving

 Indicates a research-demonstrated benefit

### Overview

Students work in groups using structured problem-solving strategy to solve complex, context-rich problems too difficult 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 for group work





**Skills**



**Designed for:** Conceptual understanding  , Problem-solving skills  , Making real-world connections, Group work

**Can be adapted for:** Using multiple representations



**Research Validation**

**Based on research into:** theories of how students learn  , student ideas about specific topics 

**Demonstrated to improve:** conceptual understanding  , problem-solving skills 

**Studied using:** classroom observations 



**Compatible Methods**

[Peer Instruction](#), [PhET](#), [UW Tutorials](#), [JiTT](#), [Ranking Tasks](#), [ILDs](#), [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](#), [New Model Course](#), [CPU](#), [SCL](#), [TEFA](#), [CU Modern](#), [CU E&M](#), [CU QM](#), [QuILTs](#), [IQP](#), [Thermal Tutorials](#), [Mechanics Tutorials](#), [Paradigms](#), [Tools for Scientific Thinking](#), [PI QM](#), [M&I](#), [Tutorials](#),

[Clickers](#), [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>

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## **Teaching materials**

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The University of Minnesota has created an [online archive of context-rich problems](#), where you can find problems for many topics in introductory mechanics and electromagnetism to use with cooperative group problem-solving.

You can also use the cooperative group problem-solving approach with [many other types of research-based activities](#).