



CAE Think/Pair/Share

Indicates a research-demonstrated benefit

Overview

Engage students in large lecture classes by asking them cognitively engaging multiple-choice questions that challenge student thinking and foster deep discussion. Students vote with colored cards, try to convince their neighbors, and vote again. The Center for Astronomy Education has developed many specific techniques for making this method as effective as possible.



Type of Method

Instructional strategy



Level

Designed for: Astronomy , Intro College Conceptual

Can be adapted for: Teacher Preparation, Teacher Professional Development, Middle School, High School, Intro College Calculus-based, Intro College Algebra-based, Intermediate Undergraduate, Advanced Undergraduate, Other Science



Setting

Designed for: Lecture - Large (30+ students)

Can be adapted for: Lecture - Small (<30 students) , Studio



Coverage

Many topics with less depth



Topics

Astronomy



Instructor Effort

Low



Skills

Designed for: Conceptual understanding of physics content , Representing knowledge in multiple ways

Can be adapted for: Problem-solving skills, Connecting conceptual and mathematical understanding, Coherent framework for physics, Understanding how physics relates to the real world



Research Validation

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

Demonstrated to improve: scores on multiple choice conceptual tests

Studied using: conceptual pre/post exams , 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](#), [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](#)



Similar Methods

[Peer Instruction](#), [ILDs](#), [Workbook for Introductory Physics](#), [TEFA](#), [PI QM](#), [Clickers](#)



Developer(s) Center for Astronomy Education



Website <http://astronomy101.jpl.nasa.gov/teachingstrategies/teachingdetails/?StrategyID=23>