Cooperative Group Learning

Chris Meyer, York Mills C. I. www.meyercreations.com/physics christopher.meyer@tdsb.on.ca

Tired of lecturing? Students inert? It's time to change how we teach physics. Learn how to transform your physics classroom into an inquiry-based, group-working hive of activity.

Why Cooperative Group Learning?

Status Quo Inadequate: Traditional teaching has been proven to be a poor method for helping students understand physics. Students learn algorithmic approaches to problems and have little conceptual understanding.

Physics Education Research: Research by physicists has transformed physics education into a science. New pedagogical techniques have demonstrated clear empirical gains in student understanding.

How to Create an Inquiry-Based Collaborative-Learning Course

Work in Groups: Create heterogeneous groups of three, change them periodically, seat students carefully

Train the Groups: Help students learn effective teamwork skills and understand new expectations, explain value and results of new model for learning physics

Use Guided-Inquiry Investigations: Hands-on, constructivist activities help students gain solid conceptual foundation, deep and narrow focus to curriculum, probing student-teacher questioning

Context-Rich Problem Solving: Build robust problem solving skills with story-like, challenging problems featuring a testable result - focus on planning and explanation

Thoughtful Homework: Use textbook readings and note taking to supplement daily investigations; choose a few thoughtful homework problems to reinforce and deeper understanding.

Assessment: Random submission of daily work, tests and quizzes must reflect course priorities: explanation and nuanced problem solving

Results: Substantial quantitative improvements in conceptual understanding compared with traditional teaching techniques, superior problem solving skills, confidence with physics language, high level of engagement, appeals to wide range of student backgrounds

How to Start

Experiment: Try a few activities here and there, try a complete unit, or go all the way and try the full course!

Resources: Today's presentation and all the course materials for Gr. 11 and 12 physics are available online at: www.meyercreations.com/physics. This includes the student workbook, PowerPoints, quizzes, problem-solving challenges, and videos - everything you need to start!

Visit: Are you interested in visiting to see this in action? Just e-mail me and arrange to drop by!