Momentum Photoproject

By Rhys Adams and Kevin Lenton

Out of Class | **In Class (Students)** | **In Class (Instructor)**

Begin Here.

Instructor preassigns students to groups (4-6 students) prior to the activity.

Individually, students either (a) find photos or a video online or (b) take their own photos or videos of two interacting objects. They then isolate photos/screenshots of the before, during, and after states of the interaction.

01

Students draw free-body diagrams (FBDs) for the two interacting objects (using the "during" image and prepare a written explanation identifying the key features (*e.g.*, duration) of the interaction and the relative magnitudes of forces on objects.

02

Students upload images, FBDs, and explanations into an online collaborative platform (*e.g.*, Visual Classroom) for sharing with group members and instructor.

Students asses/peer-review each other's work and discuss the accuracy of their FBDs, making any necessary changes.

03

No

Instructor determines whether FBDs and explanations meet necessary criteria.

Yes (Tentatively)

Instructor presents the class with clicker type questions (*e.g.*, Ohio State questions) relating to momentum. At a dry-erase whiteboard or interactive whiteboard, students answer the questions as a group, providing a written rationale for their response.

04

Groups compare and constrast (a) their answers to the concept questions and (b) the FBDs for their own interacting objects. They identify similarities between the two.

05

FOLLOW UP ACTIVITY 2

Individually, students prepare their own test question based on their selected photos/screenshots and post it into an online collaborative platform.

The instructor selects the most interesting student-designed questions and presents/assigns them to the class.

Individually, students solve the questions and submit their responses to the instructor.

FOLLOW UP ACTIVITY 1

Using an online collaborative platform, students correct their FBDs, indicating what they have changed.

Group members assess/peer-review their teammates' FBDs and explanations, suggesting potential improvements. Instructor may also comment here if desired.

Students submit their final FBD and an updated rationale using an online collaborative platform.

Individual Work

Work in Groups

Research

Upload

Writing

Problem Solving

Discussion

Peer-Review

Bloom's Taxonomy

Remember

Understand

Apply

Analyze

Evaluate

Create