

Egg Drop: On a Budget!

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Purpose: This activity allows students to design and construct a container that will protect an egg from breaking when dropped. The design and construction will be done in groups to foster teamwork, while the materials that can be used will be “bought” by the students using faux money, forcing students to “budget” their resources.

Learning Objectives:

1. Students should design and construct a container to prevent an egg from breaking when dropped.
2. Students should learn how to listen to other’s ideas and work together as a team.
3. Students should realize that in life resources are limited, and they must learn how to spend these resources in a wise way.

National Science Education Standards:

Physical Science

Motion and Forces

Science and Technology

Abilities of Technological Design

Science in Personal and Social Perspectives

Science and Technology in Society

Wisconsin State Standards:

C.8.1 Identify questions they can investigate using resources and equipment they have available

C.8.6 State what they have learned from investigations, relating their inferences to scientific knowledge and to data they have collected

D.8.5 While conducting investigations, explain the motion of objects by describing the forces acting on them

D.8.6 While conducting investigations, explain the motion of objects using concepts of speed, velocity, acceleration, friction, momentum, and changes over time, among others, and apply these concepts and explanations to real-life situations outside the classroom

G.8.2 Explain how current scientific and technological discoveries have an influence on the work people do and how some of these discoveries also lead to new careers

Grade Level: 5-12

Time: 2-3 hours

Materials:

See chart below.

Procedure:

This lesson is a twist on the classic egg drop experiment: egg drop on a budget! Many variations of this activity have been developed,¹⁻³ but a version that also teaches students to work together as a team and budget their resources would seem especially applicable, both for students' future families and future careers!



To make the egg drop containers, students will choose materials from each of 3 categories: Outer Structures, Shock Absorbers, and Fasteners. All materials are classified in one of these three areas, and students are required to use one material from each area. The options are as follows:

Outer Structure	Cost	Shock Absorbers	Cost	Fasteners	Cost
Cardboard piece (large)	15 cents	Bubble Wrap (square)	15 cents	Scotch tape roll	10 cents
Cardboard piece (med.)	10 cents	Peanuts (set of 15)	15 cents	Masking tape roll	20 cents
Cardboard piece (small)	5 cents	Plastic Air Bubbles	15 cents	Duct tape roll	25 cents
Straw	5 cents	Tissue Paper (1 sheet)	5 cents	Large Rubber Band	5 cents
Cup	10 cents	Butcher Paper (1 sheet)	5 cents		

Material Notes:

All materials were obtained from everyday objects, such as shipping packaging. Cardboard squares were cut from cardboard boxes. Any materials can be used for this activity, and their size or “shock absorbancy” should be used to determine their prices.

1. Have students divide into groups of 3-4 people. Every group should have an adult mentor. Each student should have a copy of the “price list.”
2. Give each group 10 minutes to plan what items they want to buy. Mentors should work with the students to help in the design and total cost of their design. Each group should write their materials, and the total cost, on a sheet of paper. **The cost of all materials should be less than \$1.**
3. One member of each group should bring their sheet to the “store,” staffed by an adult volunteer, who will dispense the materials.



4. Students will then have 30 minutes to construct their egg drop containers. If more materials are necessary, students can “buy” more materials or “return” unused materials.
5. Then, find a high place (such as a second story or gym stage) and let ‘em go! Let each group take their container apart and examine the status of the egg.
6. The group whose egg survives and container costs the least is the winner!

References:

¹Berger, J. “The Egg Drop Project.” <http://users.adelphia.net/~jberger5/eggdrop.html> (accessed Nov. 2006).

²“Project 3: The Egg-Drop Experiment: A Hands-On Investigative Activity.” <http://college.hmco.com/education/pbl/project/project3.html> (accessed Nov. 2006).

³“ASME Contests.” <http://www.asme.org/Events/Contests> (accessed Nov. 2006).



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