Household Items Project Guide

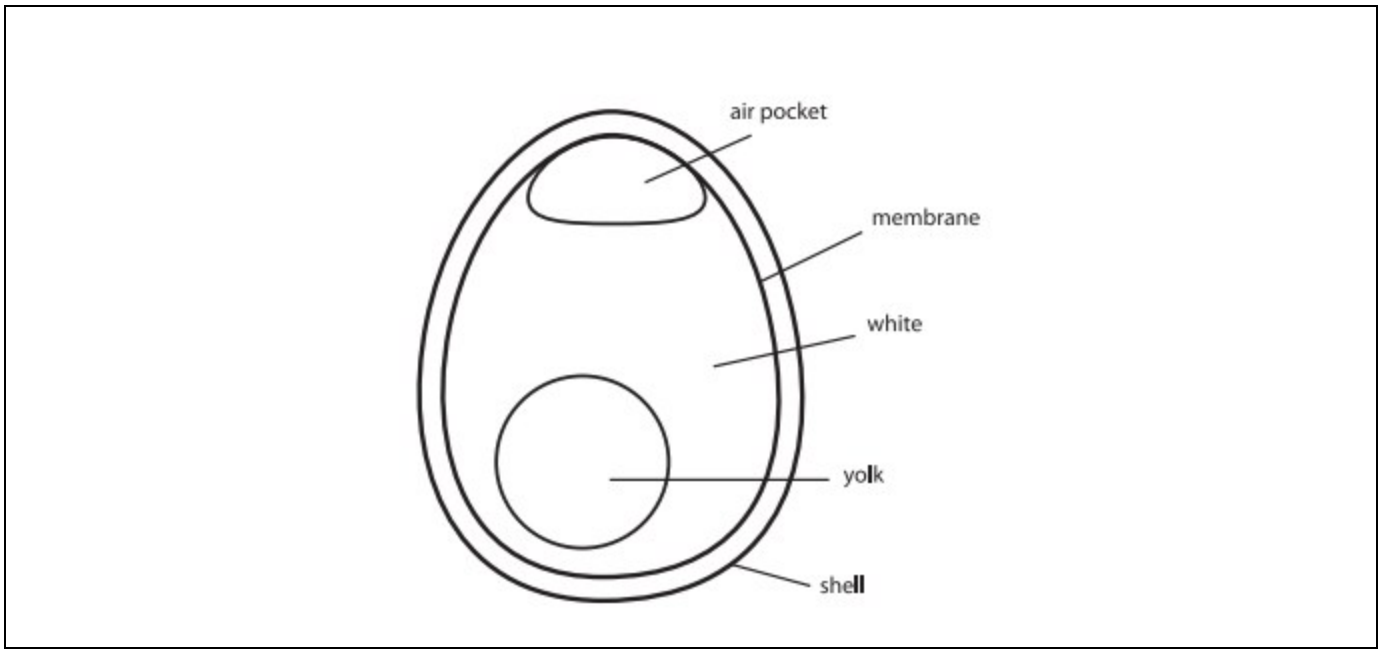
Description: Guiding students in constructing the egg drop project

Teaching - Overview

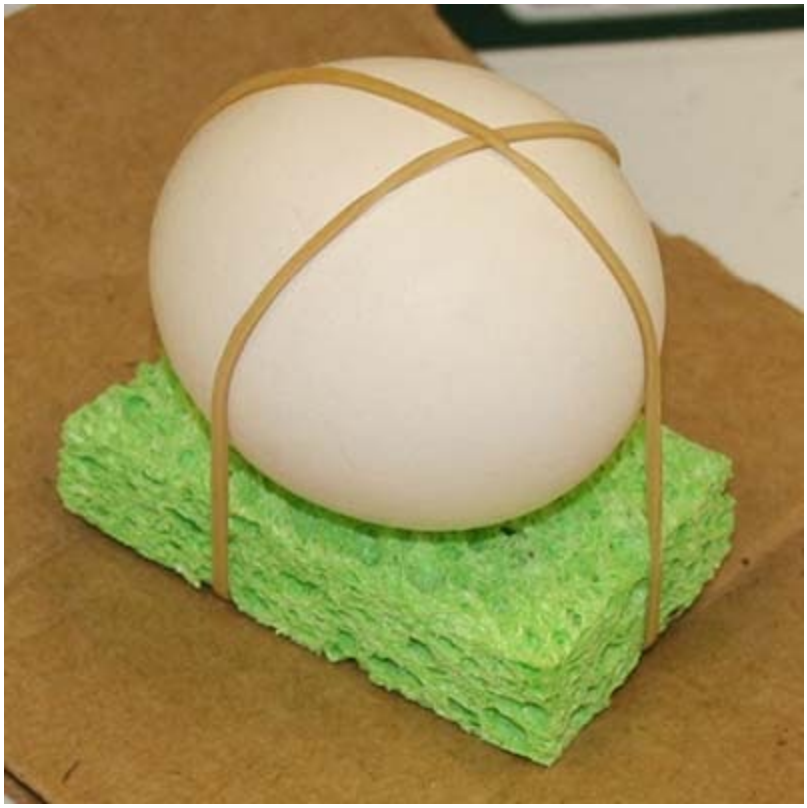
- **Instructions**: Construct some sort of container that will keep the raw egg from cracking when dropped from an elevation, and in its pristine condition.

Teaching - Concepts

- **Slow down the descent speed**
    - Develop a mechanism to slow down the speed of the egg, so that the impact does not affect the egg's structure greatly
- **Cushion the egg**
    - Build a cushion to help absorb the impact of the landing
- **Orient egg so it lands on hard part**
    - The top and bottom of the egg are stronger than the sides
    - The pressure is distributed on these arches so that no single point receives too much pressure which may result in the egg cracking



Example Design:



Teaching - Objectives

- Utilize creative techniques/tactics
    - Think outside of the box
- Brainstorm together as a team
    - Practice teamwork
    - Include EVERYone's idea
    - No idea is "dumb"
- Apply problem-solving strategies in building simple structures
    - Search easy solutions
    - Think abstractly

Teaching - Materials

- 1 egg
- Cardboard cup
- String

- Tape
- Balloons
- Straw
- 2 sheets of scrap paper
- 2 pencils
- Large plastic sheet/tarp/tablecloth
- Ladder (optional)

Teaching - Instructions

1. **Explain the Egg Drop Project**
    a. Goal
    b. Time given
    c. Etc.
2. **Form teams of 2-3**
    a. 3 preferrable
3. **Wait for all the materials to be passed out**
    a. Bag of materials
        i. *Check materials for full list
    b. 2 pencils
    c. 2 sheets of paper
4. **Brainstorm design ideas (10 minutes)**
    a. Sketch on scrap paper
5. **Finalize on an idea**
    a. Come to collective agreement with ENTIRE team
6. **Hand out eggs on egg holder**
    a. Don’t drop!
7. **Build a prototype (40 minutes)**
    a. Work together!
8. **Test**
    a. Each team gets unlimited tests until time runs out
9. **Make changes, improve**
    a. Make any necessary changes to improve design
10. **Final design, final test**
    a. Final run, make it or break it!
11. **Clean-up**
    a. EVERYBODY cleans up

12. **Competition winners announced**
    a. Optional: Prizes!

Add-Ons - Extensions

- Assign prices to each material, and assign budgets to each team
- Students come to the “store”, to ask for materials from the teacher

Post-Project Reflection- Review

1. What was successful/unsuccessful about your project?
2. What makes an egg a “good” test subject for the drop experiments?
3. What could you have changed to yield a better result?
4. How many prototypes did you construct until you built your final product?
5. What features of your design greatly contributed to success?