Responsibility Egg Drop Challenge

For this project, students will work in small groups to design a case or "safe space" in which to place an egg with the idea that the egg will remain unbroken after being dropped in this case. The students' primary responsibility is to ensure the egg doesn't break upon landing.

Kindness Concept(s)
Responsibility, Perseverance, Kindness

Project Timeframe
This project could be done in one sitting but it can also span several days; have students work in two 30-45 minute segments.

Pre-work for students is involved in bringing in materials from home. Suggest giving students two weeks to bring things in. You may want to communicate this request to parents directly.

Required Materials
- ❏ Egg (one for each group)
- ❏ Misc. packing supplies for egg drop challenge (any materials are allowed but should not be new or purchased just for this project; encourage recycling or upcycling of materials from home to prevent adding any financial pressure on families)

Context:
Students are given a very important responsibility challenge: Don't break the egg! They will work in small groups to design a container or cradle for a raw egg that they need to drop from 1 meter (~3 feet). They will use the scientific method to design and test their cradle theories and record their results throughout.

Because students need to bring in their own materials, they should be put into groups ahead of this activity and be told to bring in items they think they could use to create some kind of special case or cradle for their egg. Materials for these cradles **cannot be new**; students should bring in common house-hold items that might otherwise be recycled or thrown away (like packing supplies, tape, paper, cardboard, etc.).

Remind students that it is everyone's responsibility to make some kind of contribution to their team. If someone is not able to bring items in, they should communicate this ahead of time to their group so they can make a plan.

NOTE: *If you know you have students who are truly unable to contribute, plan to have some extra supplies you can donate to that group.*

Segment 1: Egg Drop Challenge Preparation: Cradle Design and Build
1. Have groups collect all of the materials they brought in (or that were donated) and give each group a Responsibility Egg Drop Challenge Planning Worksheet.
2. Then, using their materials as a guide, groups should plan and sketch out their egg cradle design and write out why they think this design will work.
3. When groups have finished their design, they should present their rationale and explanation to you for sign off. Ask questions and test their theory - if you know the design is likely to fail, ask them to go back to the drawing board. If you think the design could work, sign off on the design. Groups cannot move on until the teacher has signed off on their design.
4. Next, groups should build the cradle, using their materials, per their planned and approved design.

Segment 2: Egg Drop Challenge
When all cradles are built, commence with the egg drop challenge!

1. First, each group should present their cradle and rationale for success to the whole class.

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2. As groups present, students should write down the design and make a prediction as to whether or not the egg will break. (This can be done as small groups or each person can fill out this part of the inventory on their own sheet.)
3. When presentations are over, one student representative will drop their group's egg in their cradle from a height predetermined by the teacher (higher makes it more challenging). Suggested height is 1 meter. Remind students of their responsibility to get their egg to the ground safely! **Be sure the eggs are falling to a section of ground that has been covered with plastic (a garbage bag cut open and taped to the floor works well).**
4. Each group completes the Responsibility Egg Drop Challenge Recording Sheet after each drop.
5. When all groups have dropped their egg and the results have been recorded, look to see which groups were successful.

NOTE: To cut down on the mess, you could wrap the eggs in press n' seal wrap. You will still see if the egg breaks, but it will help contain the mess. Note this will also help prevent the egg from cracking so will skew the results of the cradle's effectiveness.

Wrap Up:

After all the drops are recorded, have students share whether or not their predictions were accurate and which surprised them the most. You can also have groups express what they would have done differently if their egg did not survive the drop. Have students discuss the sense of responsibility they felt (if any) to get the egg down safely. Students can also discuss how they had to persevere during the design and build phase, especially if they didn't always agree on how to build a particular piece of the structure.

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https://casel.org/guide/kindness-in-the-classroom/

Responsibility Egg Drop Challenge Planning Worksheet

Your objective is to design a system to protect a raw egg from cracking or breaking from a fall of 1 meter.

Materials: Use anything you'd like! Some ideas include: paper towels, packing peanuts, straws, tape, cardboard tubes, paper, popsicle sticks, baggies, balloons, or old boxes. Be creative in the materials you choose.

As a group, brainstorm and illustrate your design in the box below. Use more paper if necessary.

Explain why you feel your design will protect the egg and prevent it from cracking upon landing:

_____
_____
_____
_____
_____
_____

Teacher Design Sign-Off:_____

After you build and test your designs, record the results here:

Design	Do you think your design will succeed in protecting the egg from breaking?	Results of 1m drop	Was your prediction correct?
1		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
2		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
3		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
4		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
5		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
6		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
7		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
8		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
9		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct
10		[ ] Broken [ ] Not broken	[ ] Correct [ ] Not correct

(Use another sheet if you try more than 10 designs)

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