Objective

By the end of this lesson, the student will learn about the concepts of protection and impact resistance by designing a way to prevent a hard-boiled egg from cracking when dropped. The student will engage in creative thinking and problem-solving while having fun with a hands-on activity.

Materials and Prep

- 1 hard-boiled egg
- Access to a safe dropping area (like grass or a soft surface)
- Paper and pencil for sketching designs
- Timer (optional, for timed challenges)

Before the lesson, ensure the egg is hard-boiled (not raw) and that the dropping area is safe to prevent any mess or injury.

Activities

- **Design Your Protector:** The student will sketch out a design for a protective casing for the egg. Encourage them to think about materials and shapes that could help cushion the egg.
- **Build and Test:** Using only the egg, the student will create a protective structure around the egg using their design. After building, they will drop the egg from a height of their choice to see if it survives the fall.
- **Reflection and Redesign:** After the first drop, the student will discuss what worked and what didn’t. They can then redesign their protector and test it again, aiming for improvement.

Talking Points

- “Why do you think we need to protect the egg? What could happen if we drop it?”
- “What shapes do you think are the strongest? Can you think of any examples from nature?”
- “How does cushioning work? What materials do you think could help absorb the impact?”
- “What did you notice when you dropped the egg? Did it crack? Why do you think that happened?”
- “If you could redesign your protector, what would you change? Why?”
- “How does this activity relate to real-life situations? Can you think of anything that needs protection?”
- “What was the most fun part of this experiment? What did you learn?”
- “How can we use what we learned today in other projects or experiments?”