Kindergarten Rube Goldberg's Simple Machines Challenge: Build Your Own Rube Goldberg Machine

Grade Level: Kindergarten
Duration: Two 60-minute periods

Lesson Overview

Students will explore basic principles of simple machines by designing and building their own simple Rube Goldberg machines using fun materials. This hands-on activity encourages creativity, problem-solving, and teamwork.

Preparation Instructions

1. **Materials Preparation:** Gather all materials needed for the activity, including cardboard, small balls (like marbles or bouncy balls), string, tape, scissors (for teacher use), and various small objects (e.g., cups, blocks, toy figures).
2. **Video Selection:** Choose and prepare a short, engaging video of a simple Rube Goldberg machine for the hook activity.
3. **Visual Aids:** Prepare visuals or simple images to introduce basic simple machines (lever, pulley, ramp) in a kid-friendly manner.
4. **Group Organization:** Plan how to divide students into small, manageable groups.

Materials Needed

-   Cardboard
-   Small balls (e.g., marbles or bouncy balls)
-   String
-   Tape
-   Scissors (to be used with teacher supervision)
-   Various small objects (e.g., cups, blocks, toy figures)

Learning Objective

By the end of the lesson, students will be able to:

-   Identify and describe at least one simple machine in their Rube Goldberg machine.
-   Work together in groups to design and build a simple Rube Goldberg machine.

Day 1:

Engage (10 minutes)

Hook Activity: Show a short video of a simple Rube Goldberg machine in action. Discuss with students what they saw and how the machine worked. Use these **presentation slides**.
Questions to Consider:

- What did the machine do?
- What parts did you see?
- Can you name any simple machines?

Explore (20 minutes)

Introduction to Simple Machines: Provide a brief, simple overview of levers, pulleys, and ramps using visuals. Use these **presentation slides**. Show physical examples of each of the following also.

- **Levers:** Describe how levers help us lift things up and down.
- **Pulleys:** Explain how pulleys help us move things up.
- **Ramps:** Show how ramps help us roll things up and down easily.

Hands-On Activity (10 minutes)

1. Break students into small groups and show them the fun materials available for building their machines.
2. Have students work together to design a simple Rube Goldberg machine that includes at least one lever, one pulley, and one challenge.
3. Encourage students to draw their designs on paper with help from the teacher. Let them know they will be building their designs during their next class.

Challenges: Examples:

- **Make the Ball Roll:** Challenge students to create a path for the ball to roll using ramps and levers.
- **Lift Something Up:** Have students use a pulley to lift a small toy or object.

Explain (10 minutes)

Group Presentations: Each group shares their Rube Goldberg machine design with the class, explaining what each part does.
Key Concepts Discussion: Discuss the simple machines used in their designs and how they help the machine work.

Day 2: Build (40 minutes)

Building Phase: Allow students to construct their Rube Goldberg machines using the materials provided. Encourage them to test and make changes to their designs as needed.

Gallery Walk (15 minutes)

Present and Get Feedback:
Have students participate in a gallery walk where groups display their designs. Encourage students to share what they liked about each other's machines.

Quick Observable Assessment

During the gallery walk, observe each group's ability to:

- Describe the simple machines they used in their Rube Goldberg machine.
- Work together as a team during their design and building process.
- Share their thoughts about each other's machines.

Aligned Standards

- **Utah SEEd Standard K.2.2:** Plan and conduct an investigation to provide evidence that a change in an object's motion depends on the forces acting on the object.
- **Utah SEEd Standard K.1.1:** Develop and use a model to describe how the motion of an object is affected by the forces acting on it.