Spin It to Win It: Engineering Spinners with Linking Cubes (Kinder-1st Grade)

Grade Levels: Kindergarten to First Grade

Duration: 45 minutes

Standards:

- Next Generation Science Standards (NGSS):
    - K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
    - K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- Common Core State Standards (CCSS):
    - CCSS.ELA-LITERACY.SL.K.1: Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.
    - CCSS.ELA-LITERACY.SL.1.1: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.

Objectives:

- Students will work collaboratively in pairs to design and construct a spinner using linking cubes.
- Students will explore basic engineering principles, including balance and weight distribution.
- Students will engage in the engineering design process by testing their spinners and making adjustments based on observations.
- Students will participate in a friendly competition to determine the longest spinning spinner.

Materials:

- Linking cubes
- Timer or stopwatch
- Writing/drawing materials for recording observations

Procedure:

Introduction (5 minutes):

- Introduce the concept of spinners and explain the engineering challenge.
- Discuss the importance of teamwork and creativity in solving the problem.

Design and Construction (15 minutes):

- Pair students and distribute linking cubes.
- Encourage students to brainstorm and design their spinners.
- Provide time for students to construct their spinners based on their designs.

Testing Phase (15 minutes):

- Invite students to test their spinners by spinning them and measuring the duration.
- Encourage students to observe the behavior of their spinners and record their observations.

Adjustments and Reflection (10 minutes):

- Allow students to make adjustments to their spinners based on their observations.
- Facilitate a class discussion where students share what worked well and what could be improved in their spinner designs.

Friendly Competition (5 minutes):

- Organize a friendly competition where students take turns spinning their spinners.
- Use a timer or stopwatch to measure the duration of each spin.
- Congratulate the winners and celebrate the accomplishments of all students.

Assessment:

- Observation of students' collaboration and engagement during the activity.
- Review of students' recorded observations and reflections on their spinner designs.
- Measurement of spinner spin times during the friendly competition.

Extension:

- Encourage students to experiment with different designs or materials to create new spinners.
- Provide opportunities for students to share their spinners with their classmates and explain their design choices.