Flight of the Table Tennis Ball Activity—Directions

Your task today is to launch a table tennis ball and get it into a cup in the center of a circle. Your design is more likely to be successful if you apply what you know about potential and kinetic energy. Your challenge: Given limited materials, devise a way to deposit a table tennis ball into a paper cup that is located in the middle of a six-foot-diameter circle.

Materials

These are your materials.

- Two inches of transparent adhesive tape
- Twelve inches of three-ply string
- Four rubber bands
- One small paper drinking cup
- One sheet of copy paper
- Two paper clips
- One brown paper lunch bag (approximately 3 × 7 inches)

You may use scissors, but ***you cannot use*** glue.

Design Constraints

These are your constraints.

- Every person in the team must be actively involved in the placement of the ball.
- The table tennis ball must start outside the circle and must come to rest inside the cup in the center of the circle.
- You may not touch the ball or reach into the six-foot circle.
- *No part of anyone's body* may extend into the imaginary cylinder that extends above the circle.
- You may use only the provided materials.
- You will have fifteen minutes to build.

Testing Components

Read and then follow these directions.

1. You may test your launching device outside of the actual testing area during your building process, but you *cannot use the actual testing area*.
2. You will get three tries to get your table tennis ball into the center cup.
   Reminder: Every person must be actively involved in getting the ball into the cup.
3. After every attempt, each group will mark where their ball landed in the circle with a different color sticky note.
4. For version one (quantitative), you must measure and record your attempts from the center cup. In this case, have a tape measure available.
5. For version two (qualitative), keep sticky notes in place and look for improvement with subsequent trials.

Reflection Questions

Consider these questions when we're done.

- Can you explain how your device stores potential energy?
- Can you explain how your device transfers energy from potential to kinetic?
- What did the measurements you took from testing tell you about your device?
- What was the most challenging aspect of your design?
- If you could have one more material, what would it be?