3-PS2-4 Assessment Option

LESSON TITLE: How can I use a magnet to move an object?

SUGGESTED MATERIALS

- Random sizes and shapes of magnets
  - 2 bar magnets clearly labeled north and south
  - magnetic wand
  - Craft and Hobby Magnetic Tape
- Objects to use unbalanced magnetic force to start and stop
  - Styrofoam/cotton balls
  - block of wood
  - ball (?)
- Maze Materials:
  - roll of craft paper
  - painter's tape
- Magic markers

Now that we know two magnets can interact and create an unbalanced force causing an object to move (or stop) without actually touching it, we need your help!

- Show this Fun with Magnets video.
  - Ask students what they think is going on.
  - What are those white fuzzy things?
  - Are they alive?
  - What is moving them? Where is the force coming from? Is it magic? etc…

The company, Toys' for Peeps" wants your help to create a maze and help the white fuzzy snow peeps (Remember seeing them in the video at the beginning of class) find their way home.

Engineering Design Challenge:

- You have to create a maze that is between **3-4 feet long** and has **at least two turns** in it.
- Create a contraption to carry the snow peeps home without touching it.
- Practice moving the vehicle through the maze until you can do it successfully.

- Write 3-5 rules on your maze so other people will how how to play and how to win (or keep score) at your game.
  - Do you want it to be about speed and how long it takes to move 5 snow peeps through?
  - Or do you want it to be a race between two different snow peeps?
  - What happens if the peeps run out of the maze? What are the rule consequences (maybe a wolf or a bear is lurking in the shrubs and the sheep gets eaten).

- Invite another team to play your game and keep score.
- Is the game challenging enough or is it too hard.
- Modify the game a bit to make is better.

Engineering Design Loop: In partners/small groups, students will follow the engineering design loop process to create and test their designs.

- Understand the problem they are working to solve
- Brainstorm how they could design their game - draw their idea; share solutions; select one to try.
- Design and test the solution.
- Evaluate results - did it work? Why/Why not? Do you need to adjust or modify?

EVALUATION

- How will students demonstrate that they have achieved the lesson objective?
- This should be embedded throughout the lesson as well as at the end of the lesson
- Other students should be able to play the game successfully.
- Students can critique their own game and suggest two ways to improve it and explain why.