Activity 2.2 Push and Pull Centers Teacher Notes

Introduction

You use pushes and pulls every day. You may pull a wagon or push a truck across the floor. When you use a push or a pull, you are using force. An empty wagon is easier to pull than a wagon with a heavy load. More force is required to pull the heavy load.

In this activity you will explore different pushes or pulls as you visit several learning centers.

Equipment

- Launch Log
- iPad® tablets (one per learning center station)
- Tablet application
  - Instructure by Canvas
  - Educreations™
- *Give It a Push! Give It a Pull!* by Jennifer Boothroyd
- 3 Centers (Create 2 sets for use at each center)
  - Goldie Blox™ and the Spinning Machines
  - 8 Wood blocks
  - 4 Wiffle® balls
  - String

Procedure

Prior to starting Activity 2.2, you will need to set up two sets of three learning centers on pushes and pulls. The three centers should be set up as follows:

Stations 1 and 4: Goldie Blox™ and the Spinning Machines

- *Set up this center to allow students to work through the story in the book that accompanies the activity. If you do not have two adults to read to students in this center, you may offer pictures for students to attempt the different set-ups found in the story.*
- *Tablet (will be used to take a picture)*

Stations 2 and 5: Blocks

- *8 blocks (4 pairs of different rectangular prism shapes)*
- *Varying surfaces (smooth and rough) for students to explore. Suggestions for a rough surface include a small carpet square or a piece of sandpaper. Smooth surfaces can be represented by the table top or with a piece of cardstock. An option would be to also include surfaces that are flat (piece of cardstock) and steep (create a sloping surface with additional blocks).*

- *Tablet for the students access to Activity 2.2 Pushes and Pulls with Blocks.*

Stations 3 and 6: Ball and String

- *Include 4 balls; 2 with a string (~2 ft.) tied to the ball and 2 with no string attached.*
- *Tablet for students to access Activity 2.2 Pushes and Pulls with Wiffle® Balls.*

NOTE: *For the Blocks and Ball centers, it is suggested that you use a large box for students to test the items so that the area can be contained.*

1. Access Activity 2.2 and read the introduction to set the stage for the learning centers.
2. Use the book *Give It a Push! Give It a Pull!* to help students define the concept of force. Ask students to share examples of pushes and pulls in their daily life.
3. Students will rotate through three learning centers to explore more about pushes and pulls. The learning center activities are as follows:
    - **Goldie Blox and the Spinning Machines:**

      Students will work through the activity outlined in the story to try to pull objects in two different ways. An adult will need to read the story to the groups, guide their construction, and discuss the difference in the pulls in the two setups. For each of the two constructions, have students take a picture or a video recording of their designs using the camera app on a tablet.
    - **Blocks**

      Students will follow the directions in the Activity 2.2 Pushes and Pulls with Blocks presentation on the tablet to explore pushing the blocks on different surfaces. They will also consider how the force needed for the push or pull differs on varying surfaces. The presentation will direct students to respond to questions in their Launch Log.
    - **Wiffle Ball and String**

      Students will utilize Activity 2.2 Pushes and Pulls with Wiffle® Balls on the tablets as they explore how to push and pull the ball over a distance. The presentation will direct students to respond to questions in their Launch Log.
4. Lead students in a discussion of what they have discovered through the learning centers. Use the following to guide the discussion:
    - **Goldie Blox and the Spinning Machines**
        - Project the pictures or video recordings made by the groups to show the two building designs they completed.
        - Which design worked the best? Explain.
        - The rope was pulled to make the figures move. Where did you use force to get the rope to turn?

- **Blocks**
    - Which type of force did you use in the Blocks center – a push or a pull?
    - On which surface could you push the blocks easier?
    - What makes it harder to push the blocks on the rough surface?

- **Ball and String**
    - Describe how you pulled the ball.
    - Describe how you pushed the ball.
    - Did it take a lot of force to push or pull the ball? Why or why not?
    - How would this change if the ball weighed 100 pounds?

Conclusion Questions for Discussion

1. Name two examples of using a push to move an object – one that takes a small amount of force and one that takes more force. (**Note to Teacher**: Students may draw their answers and take a picture of their drawings. The images can be submitted to the LMS if desired by the teacher.)

2. Why it is more difficult to pull a wagon that is loaded with rocks than it is to pull an empty wagon?