



# PUSHES AND PULLS WITH BOXES

SCIENCE: FORCE & MOTION

*Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.*

## OBJECTIVE OF THIS INVESTIGATION:

Children will understand how pushes and pulls, along with the environment itself, affect the motion of objects

## VOCABULARY:

- Push
- Pull
- Crash
- Hard/easy
- Big/small

## MATERIALS:

- Large, empty cardboard boxes or other containers
- Small, empty cardboard boxes or other containers
- Cardboard boxes filled with books or other heavy objects

## PROGRESSION STEPS (SCIENCE: FORCE & MOTION):

Visit [STEMIE Learning Trajectories](#) for details

- Motion Type Identifier
- Motion Predictor
- Impact on Motion Predictor

## THIS INVESTIGATION:

- Provide children with a variety of cardboard boxes laid out around the room. The boxes could be right side up, upside down, turned on their side.
- Encourage children to explore the boxes by climbing inside, pushing or pulling the boxes around the room, or any other safe ways they may want to explore:

**“You’re pulling the box. I’m going to pull one too!”**

**“You’re inside of the box. It’s too heavy to push the box with you inside. It won’t move! I wonder what we could do so that we can push the box?”**

- If/when children collide into one another, narrate what happened and encourage children to investigate what happened:

**“What happened to your box when [child A] bumped into your box with her box?”**

**“You crashed into this box, and it fell over. That was a big collision or crash!”**

## ADAPTATIONS:

See [A Guide to Adaptations](#) for general ideas and strategies

### Environment:

- Ensure there is enough space for children with wheelchairs to participate in pushing and pulling boxes as well.





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## THIS INVESTIGATION (CONTINUED):

- Encourage children to think about how else they could move the boxes:
  - **"Do you think you can lift the box above your head?"**
  - **"Is it hard to walk while holding the box?"**

## ADAPTATIONS (CONTINUED):

### Materials:

- Ensure that boxes are of appropriate size for children who may have gross motor issues or who may be gripping the boxes from different positions (e.g., lying down, from a wheelchair)
- Add seating supports such as pillows/blankets inside the boxes to support children sitting upright
- Instruction:
  - If children are unable or unwilling to push the boxes themselves, ask the child if you can push the box with the child inside.
  - Make a path on the ground out of materials such as masking tape to guide children to push the box along the path

## HOW TO CONTINUE THIS INVESTIGATION:

- Encourage children to investigate moving boxes on different surfaces (e.g., the carpet vs tile):

**"I wonder what will happen if we try pushing the heavy box on the tile over here and then try on the carpet. Let's try pushing the box on the tile. Now let's try on the carpet. Hmmm, it seems like it's easier to push on the tile. I wonder why that is?"**

SUPPORT MATERIALS: Use the blank one to make your own!

