

# Science and Inquiry in Full-Day Kindergarten (FDK)

## ««« By Kristian Levey

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*This information is recommended for use with the Ontario Curriculum, The Full-Day Early Learning - Kindergarten Program, Science and Technology.*

### **Purpose of the Activity**

Through the lens of inquiry in FDK, educators can create science learning opportunities that build literacy and/or numeracy capacities through play-based learning. Using a

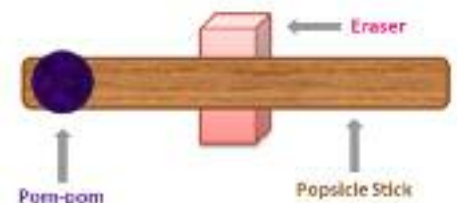
learning activity, documentation, artifact(s), and extension activities, students will strengthen their understanding and confidence as emerging scientists.

In this activity students will learn about levers in the context of simple machines. Students interested in learning about skateboards and ramps provided an excellent opportunity to teach them about various simple machines in an inquiry project including the scientific skills of predicting, observing, measuring, and explaining. Simple machines can be incorporated into numerous different student-initiated topics.

Although this lesson can be used outright, the hope is it will provide a method with which to model future science inquiries to create opportunities for science learning in the FDK classroom while facilitating documentation and community building in the school. Consider inviting a junior or intermediate student to run this activity as a “visiting scientist” to build the school community.

### **Equipment Needed**

- *Levers* by Sally M. Walker and Roseann Feldmann (ISBN: 978-0822522126)
- Alternate book or series of photos (ex. see-saw, wheel barrel, light switch, scissors)
- Large Eraser(s) (one per student)
- Large Popsicle Sticks (one per student)
- Pom-poms, the small heavier craft store ones work well (one per student)
- Blank paper and pencils/crayons (one per student)
- Camera (for documentation)
- Documentation Black Line Master (template included)



### ***Methodology***

This activity can be completed comfortably in groups of 2-5 students. Small groups allow students who are interested to come to the activity freely during play-based learning. It also allows for easier documentation, and the small group increases student engagement.

**Step 1:** First introduce the concept of a lever (If you wish you can discuss the three classes of levers, but this example focuses only on first-class levers). Use a book on levers, artifacts (ex. scissors, light switches, or other objects in room), or pictures (ex. see-saw, wheelbarrow) to show examples of levers and how they are useful. A lever is a rigid or stiff beam used to move other objects. The system consists of the lever (beam), fulcrum (an object the lever rests on), load (an object that you want to move), and force (push or pull).

**Step 2:** Have the group of students sit in a circle, around a table (or at the carpet) facing each other. Have them place their hand up so they are pushing on either neighbour's hands. Teach them to push gently against each other's hands and ask if they can feel the force from pushing.

**Step 3:** To demonstrate the parts of a lever, have students set an eraser on the table, with the Popsicle stick balancing evenly on the eraser. Place the pom-pom on one end of the stick. Explain to the students that the eraser is the fulcrum, the stick is the lever, and the pom-pom is the load. Tell the students "we just need a force on the other end, what could we use?"

**Step 4:** Once students recognize they can use their hand as the force, remind them to make sure no one is near where their pom-pom will go (we do not want anyone to get hurt). Before they "use the force", have students repeat the names of the parts of the first-class lever system: Fulcrum, lever, load ... force. As they say force let them push down on the other end of the stick to send their pom-pom flying! Consider having different coloured pom-poms for each student in the group so they can find theirs easily. This is a great opportunity to take pictures of the students for documentation and provides wonderful expressions of surprise!

**Step 5:** Once all the pom-poms are collected, have them repeat the experiment again, remembering to say the names of each part as the "countdown" to using "the force".

### ***Safety Concerns***

Remind students to be careful where they aim their pom-pom, so no one is hit in the eye.

### ***Suggested Extension***

After the science inquiry, send students home with an artifact to allow them an opportunity to take home a "mini-experiment" that they can repeat with parents.

Have students label a diagram of the parts of the first-class lever for the activity they just completed on a blank piece of paper. You may choose to have students sound out the words, or provide pre-written cards for them to copy-write. This gives a great opportunity to extend their learning practicing phonemic awareness (fulcrum), vowel pairs (**load**), and silent/helper e (**force, lever**).

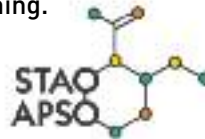
Have the students move the lever, fulcrum, load, and force around to see how it changes the way the pom-pom moves.

### ***Guiding Questions***

1. Can you tell me where the fulcrum/load/lever/force is? (ex. in experiment, or photos provided)
2. Why did the pom-pom go up, even though the force pushed down?
3. What other examples of forces (push or pull) do you know?

### ***Conclusion***

Levers help us move objects to make work easier. Through FDK, we can teach students a science concept, let them explore, and write/talk about their observations to incorporate literacy and/or numeracy. Giving students an artifact to take home with a description of the activity (including photos taken) helps extend their learning, and create parent involvement, while providing an efficient way for educators to document learning.



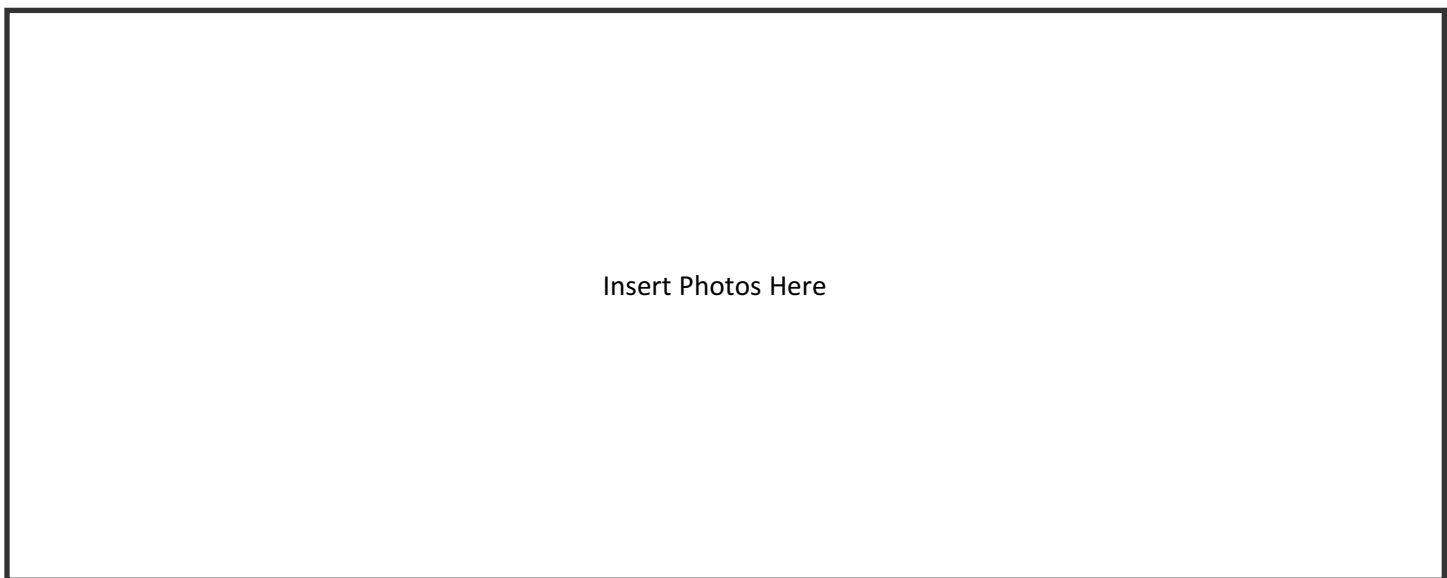
***See next page for student take-home page***

# KINDER SCIENCE

Today, your child had an opportunity to learn about the simple machine: the lever.

Students learned that a lever has a fulcrum, a load, and a force. We learned that there are lots of things that are levers, like a pair of scissors, a light switch, and wheelbarrow to name a few. We also learned that a skateboard can be a lever, and that skateboarders use this concept to do some of their tricks.

Below are some pictures that were taken during the activity. As a memory of this experience, each child has received an eraser, Popsicle stick, and a pop-pom. Ask your child to teach you what he or she learned about levers!



## Kindergarten Curriculum Expectations

### Science and Technology

- 2.3 make predictions before and during investigations
- 2.4 communicate results and findings from individual and group investigations

### Language

- 1.4 follow and provide one- and two-step directions in different contexts
- 1.7 use specialized vocabulary for a variety of purposes
- 1.10 orally retell simple events and simple familiar stories in proper sequence
- 4.2 demonstrate an awareness that writing can convey ideas or messages

*"Write student quote here if applicable."*

