Gr. 2 - Understanding Structures & Mechanisms

Movement

Static Friction/Moving Friction

Specific Expectations:

2.1 Follow established safety procedures during science and technology investigations.

2.2 Investigate and describe different kinds of movement.

3.1 Describe different ways in which objects move.

3.2 Identify ways in which the position of an object can be changed.

Big Idea (for lesson):

Students explore the different between static and kinetic friction by building a hands-on widget that easily demonstrates the difference in effort necessary, and discuss the implications and benefits of these forces on motion.

Accommodations:

- ☒ Increase time
- ☒ Visual Aids
- ☒ Manipulatives
- ☒ Chunking
- ☒ Step-by-Step
- ☒ Scaffolding
- ☒ Copy of Notes
- ☒ Student Grouping

Differentiated Instruction:

- ☒ Content: Use demo to show the content as you offer verbal descriptions.
- ☒ Process: Have students work in pairs and support each other if physical impediments exist.
- ☒ Product: Students may show their final product in pairs, and communicate their findings either verbally, visually, or through written means.
- ☐ Other: _____

Bloom's Taxonomy:

- ☒ Knowledge
- ☒ Comprehension
- ☒ Application
- ☒ Analysis
- ☐ Synthesis
- ☐ Evaluation

Multiple Intelligence:

- ☒ Verbal/Linguistic
- ☒ Logical/Mathematical
- ☒ Visual/Spatial
- ☒ Bodily/Kinesthetic
- ☒ Naturalist
- ☐ Musical/Rhythmic
- ☒ Interpersonal
- ☒ Intrapersonal

Delivering The Lesson:

Portion & Timing	Grouping:			Introduction:	Materials
Minds On: 10 mins	W ☒	S ☐	I ☐	Teacher can do the "magic" demonstration as described at the following link:	2 Glass Soda Bottles 2 Pieces of Rope

				http://www.stevespanglerscience.com/lab/experiments/root-beer-genie, or show the video listed on the side. After students find out how the trick works, ask them to explain how it works in their own words. Ask students how friction prevents the one bottle from falling? (*Answer: The surface of the ball (the "genie") provides adequate force or resistance to bind the rope against the glass and keeps the rope from slipping out of the bottle.*)	1 Small Ball Static & Moving Friction – Root Beer Genie – Sick Science!.mp4
Action: **15 mins**	W ☒	S ☒	I ☒	Have students build their own friction box according to the instructions on the handout. Teacher can circulate and ask questions of the different groups: -Which is harder to overcome, static or kinetic (moving) friction? (*Answer: static*) -Can you think of any everyday situations where this would be good to know? (*Answer: pushing a car out of a ditch versus keeping it going.*)	Static Friction & Moving Friction Handout (Materials listed)
Consolidate: **10 mins**	W ☒	S ☒	I ☐	Spend a few minutes comparing different sized boxes, different weights of objects, etc. and pointing out the changes in effort when the students try to pull. Make a T-chart on the board and have students suggest situations where it would be ideal for friction to be greater (ie. running shoes) and situations where it would be better for friction to be lessened (ie. the bottom of skis).	Objects of various weights.