Science K-2: Tug of War

Intended Audience: Students with significant cognitive disabilities

# **Standards:**

SC.K.P.13.1 Observe that a push or a pull can change the way that an object is moving.

SC.1.P.13.1 Demonstrate that the way to change the motion of an object is by applying a push or a pull.

SC.1.N.1.2 Using the five senses as tools, make careful observations, describe objects in terms of number, shape, texture, size, weight, color, and motion, and compare their observations with others.

SC.2.P.13.1 Investigate the effects of applying various pushes and pulls on different objects.

SC.2.P.13.4 Demonstrate that the greater the force (push or pull) applied to an object, the greater the change in the motion of the object.

# **Learning Objectives:**

1. Students will identify that a movement is a pull.

2. Students will predict the outcome of pulling on a rope.

# **Vocabulary:**

1. force: strength or energy exerted

2. pull: to hold onto and move something toward you

**Materials:**

* Google images for children playing Tug of War: [Tug of War images](https://www.google.com/search?safe=active&rlz=1C1GCEB_enUS848US848&tbm=isch&q=tug+of+war+images&chips=q:tug+of+war+images,online_chips:playing+tug&usg=AI4_-kTsfxNDFp0L5ZnW_Gj6bS2Roy_KUg&sa=X&ved=0ahUKEwiYsP-7v4fjAhVKRa0KHW1KAacQ4lYINSgK&biw=1094&bih=472&dpr=1.25)
* Small and large objects to be moved during activating prior knowledge
* 3’ of string or yarn, enough for pairs of students
* Tug of War rope or rope that is between 50’- 100’
* A cloth or bandana to tie in the center of the rope and tape (or other marker to show the “line” or center)
* A clear outdoor space to play Tug of War
* Prior to instruction: visual supports for academic content

# **Essential/Guiding Questions:**

1. What happen when there is a pull on an objects that affects your body’s movement?

2. How does a pull affect the movement of an object?

**Lesson Presentation:**

**Activating Prior Knowledge:**

1. Give students multiple objects, large and small, and ask them how they can be moved. (Answers will vary.)

2. Ask students: Is there a way that people can be moved in the same way?

**Modeled instruction:**

1. Show students [Tug of War images](https://www.google.com/search?safe=active&rlz=1C1GCEB_enUS848US848&tbm=isch&q=tug+of+war+images&chips=q:tug+of+war+images,online_chips:playing+tug&usg=AI4_-kTsfxNDFp0L5ZnW_Gj6bS2Roy_KUg&sa=X&ved=0ahUKEwiYsP-7v4fjAhVKRa0KHW1KAacQ4lYINSgK&biw=1094&bih=472&dpr=1.25). Ask: Have you seen this before?

2. Tell students that in order to play the game they need to understand the force, pull. Use visual supports and additional videos/prior knowledge to explain and review concepts.

3. Explain the game of tug of war and model how it is played with string or yarn. Model with a student or adult.

4. Tell students that they are going to play Tug of War using skills that they have learned both in the classroom and at PE.

5. In this game, you will be pulling on a rope. Ask students: How do you think the rope will affect the movement of your body? Chart predictions on the board/Smartboard.

**Supported/Guided instruction:**

1. Review the [Tug of War images](https://www.google.com/search?safe=active&rlz=1C1GCEB_enUS848US848&tbm=isch&q=tug+of+war+images&chips=q:tug+of+war+images,online_chips:playing+tug&usg=AI4_-kTsfxNDFp0L5ZnW_Gj6bS2Roy_KUg&sa=X&ved=0ahUKEwiYsP-7v4fjAhVKRa0KHW1KAacQ4lYINSgK&biw=1094&bih=472&dpr=1.25).

2. Have students practice with a partner using the string/yarn. Students will remain seated so their bodies do not move in their entirety. Ask students: Is there a part of your body that is moving? What does the force of the pull make your hands/arms/upper body do? (Answers will vary.)

3. Reinforce vocabulary: force and pull.

4. Once outside, divide students into two groups; there might be a need for adult support for both groups. Choose a center spot and mark it with tape or other marker.

5. Place the rope on the ground. Line students up on the rope with the cloth/bandana tied in the middle. (Students may need a colored visual to know where to stand to give personal space to all.)

6. Give a starting command (i.e. “on your mark, get set, go” or “1, 2, 3 pull). Pull should be controlled by the adult on each side of the rope to ensure student safety.

7. Play until one group crosses the center line with their pulls. Repeat three times, ensuring student safety each time.

8. After returning to the classroom, ask: Were students predictions correct? Discuss as a group.

**Independent Work/Small Group Suggestions:**

1. Game came be played on a smaller scale in the classroom.

2. Students can use playdoh or clay to show the force of pull when they pull in different directions.

**Assessment:**

1. Students will accurately predict that the pull of the rope will move the students that are holding it and demonstrate their knowledge of “pull” during Tug of War.

2. Teachers should utilize district created rubrics to score student work.

**UDL:**

**Multiple means of representation:**

1. Students can represent their understanding of “pull” with smaller, flexible objects (i.e. Playdoh, clay, cotton balls, a Slinky).

2. Students can show with a partner how they pull a string or a learning toy.

3. Students can show their understanding of “pull” at other times of the day (i.e. pulling paper towels out of the dispenser, pulling up their pants in the bathroom, pulling open the door of the classroom).

4. Students can work independently with peer or adult supports.

**Multiple means of expression:**

1. All students should have access to expressive language/technology that is appropriate for their specific need.

2. Expression may come in the form of verbal responses, signed responses, pointing/gestures, eye gaze, or through the use of a low or high tech device.

3. Text to speech options are available for computers on the Word app, iPads and other hand held devices. Google Chrome offers free extensions, such as Selection Reader and Select and Speak-Text to Speech, and apps, such as Text to Speech, Text to Speech with Google Drive, and TTS Reader- Unlimited Text-to-Speech.

4. Speech to text options are also available from Google. Extensions include Voice Note II-Speech to Text, Online speech recognition, and Co: Writer Universal. Voice Note II is also available as an app; Speech notes-Speech to Text Notepad is available as well. Microsoft Word also has speech to text options.

5. Additional information about text to speech and speech to text options are available through your district Assistive Technology Department.

**Multiple means of engagement:**

1. Provide students with different ways to manipulate objects to pull if there are tactile sensory concerns. Students can pull playdoh, clay, cotton balls, or a Slinky.
2. Provide students with opportunities to work in small groups or 1:1.

3. Each student, regardless of disability, should be part of this learning activity.

4. Allow students to be positioned for maximum engagement.

**Assistive Technology Recommendations:**

1. All students should have a means of expressive communication and a way to be actively engaged in learning.

2. Response modes may include, but are not limited to: eye gaze, gesturing or pointing to pictures/words/phrases, signing, low tech devices (GoTalks, etc.), or dynamic devices (iPad, etc.)

3. Lesson vocabulary, photos/pictures and graphic representations should be created and/or printed prior to the lesson to provide all students with an opportunity to be engaged in discussion.

4. When possible, provide students with text to speech options. Articles and passages from Readworks.org have this option.

5. If students are writing in response to text or writing as a means of sharing information, provide students with alternates to pencils. Speech to text and alternative pencils should be considered. Find more information about alternative pencils here: [Alternative Pencils](http://alternativepencils.weebly.com/)

**Technology Needed:**

* none

**Additional Resources:**

* video clip: [Children's Tug of War](https://www.youtube.com/watch?v=zlSgBt8LRZ0)
* Book: Tug of War by John Burningham (a Nigerian folktale)
* Book: Tug of War by Naomi Howarth