

Tug of War

Arkansas K-12 Science Standards Lesson Planning Template

Grade:	Topic:	Lesson # _____ in a series of _____ lessons
Brief Lesson Description: Students will be able to identify, demonstrate, and explain the impact of unbalanced and balanced forces through the game of "Tug of War".		
Performance Expectation(s): 3.PS2-1 3.PS2.2		
Specific Learning Outcomes: <ul style="list-style-type: none"> • I can explain what happens to an object when force is applied to it. • Students will learn that an object will not move if equal forces are applied, as well as, an object will move if unbalanced forces are applied. • 		
Narrative / Background Information: <ul style="list-style-type: none"> • What is a force? A push or pull on an object. 		
Prior Student Knowledge: Pushes and pulls can have different strengths and direction and change speed or direction.		
Science & Engineering Practices: <input type="checkbox"/> _ Asking questions and defining problems <input type="checkbox"/> _ Developing and using models <input checked="" type="checkbox"/> _ Planning and carrying out investigation <input checked="" type="checkbox"/> _ Analyzing and interpreting data <input type="checkbox"/> _ Using math and computational thinking <input checked="" type="checkbox"/> _ Constructing explanations/designing solutions <input checked="" type="checkbox"/> _ Engaging in argument from evidence <input checked="" type="checkbox"/> _ Obtaining/evaluating/communicating info	Disciplinary Core Ideas: PS2.A	Crosscutting Concepts: <input checked="" type="checkbox"/> _ Patterns <input checked="" type="checkbox"/> _ Cause and effect <input type="checkbox"/> _ Scale, proportion and quantity <input type="checkbox"/> _ Systems and system models <input type="checkbox"/> _ Energy and matter <input type="checkbox"/> _ Structure and function <input type="checkbox"/> _ Stability and change
Possible Preconceptions/Misconceptions: <ul style="list-style-type: none"> • An object that is not moving does not have forces acting on it 		
LESSON PLAN – 5-E Model		
ENGAGE: Opening Activity – Access Prior Learning / Stimulate Interest / Generate Questions: <ul style="list-style-type: none"> • Tug of War video from YouTube. • Discussion about what took place in the video and what they know about Tug of War. • Take them outside to see tug of war set up. Have them answer these questions in their notebooks: <ul style="list-style-type: none"> • What do you notice about the rope? Is it moving? How could we make it move? Brainstorm ideas.		
EXPLORE: Lesson Description – Materials Needed / Probing or Clarifying Questions: <ul style="list-style-type: none"> • Pick up the rope and hold it without applying any force. Is the marker moving? • Lean away from the center of the rope without applying any additional force. Is it moving? why? • Choose two different sized children and have them pull on the rope. What happens? • Separate class into two teams, have students make observations about each team and predict which team will win and why. What questions can students generate about possible outcomes. • TuG of War 		

EXPLAIN: Concepts Explained and Vocabulary Defined:

Discuss observations and findings. Introduce force and meaning along with vocabulary.

Vocabulary:

- balanced forces
- unbalanced forces

ELABORATE: Applications and Extensions:

Create a variety of teams for a tug of war challenge

EVALUATE:**Formative Monitoring (Questioning / Discussion):**

Interactive notebooks-questioning, predictions, and observations.

Elaborate Further / Reflect: Enrichment:

Class vs. class Tug of War

