



artsNOW

Integrated learning solutions

SIMPLE MACHINE HEXATHLON CHALLENGE

Grade Band: K-1

Content Focus: Theatre & Science



LEARNING DESCRIPTION

In this lesson, students will read how Mazie engineers simple machines in her house when students read the book, *Mazie's Amazing Machines*, by Sheryl Haft. Students will embody the six simple machines in their groups by creating tableaux and playing the 3-Second Machine Game. They will then be challenged to create a hexathlon (six-event) competition using pantomime by demonstrating simple machines using their bodies.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How do simple machines help make tasks in our everyday lives easier?	I can bring simple machines to life using my body.
How do the parts of something help make the whole?	I can work as a team to design simple machines. I can work as a team to pantomime everyday tasks using simple machines.



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What is the relationship between an object's physical attributes and its resulting motion?

I can explain the role of force and motion in simple machines.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
<p>Kindergarten SKP2. Obtain, evaluate, and communicate information to compare and describe different types of motion. a. Plan and carry out an investigation to determine the relationship between an object's physical attributes and its resulting motion (straight, circular, back and forth, fast and slow, and motionless) when a force is applied. (Examples could include toss, drop, push, and pull.)</p>	<p>Kindergarten TAK.PR.1 Act by communicating and sustaining roles in formal and informal environments. c. Cooperate in theatre experiences. d. Assume roles in a variety of dramatic forms (e.g. narrated story, pantomime, puppetry, dramatic play).</p>

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Kindergarten K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p>Anchor Standard 3: I can act in improvised scenes and written scripts. Anchor Standard 8: I can relate theatre to other content areas, arts disciplines, and careers.</p>

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none">• <u>Simple machines</u> - Basic mechanical devices that are used to make work easier by altering the magnitude or direction of a force• <u>Motion</u> - The change in position or orientation of an object with respect to	<ul style="list-style-type: none">• <u>Body</u> - The physical presence, movements, and expressions of an actor• <u>Gestures</u> - The movements and actions of the body, particularly the hands, arms, and face, that are used by actors to convey emotions, thoughts, intentions,



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a reference point or frame of reference

- Force - A push or pull that can cause an object to change its state of motion, accelerate, deform, or experience other effects
- Lever - A simple machine consisting of a rigid beam or bar that is free to pivot around a fixed point called a fulcrum
- Pulley - A simple machine consisting of a grooved wheel (often called a sheave) that is mounted on a fixed or movable axle
- Wedge - A simple machine consisting of a triangular-shaped object with a sharp edge or inclined plane on one or both of its sides
- Inclined plane - A simple machine consisting of a sloping surface or ramp that reduces the amount of force required to lift or move objects vertically
- Wheel and axle - A simple machine consisting of a wheel (a circular object with a central hole) mounted on an axle (a cylindrical shaft)
- Screw - A simple machine and a type of fastener that consists of a cylindrical shaft with a helical (spiral) ridge or thread wrapped around it
- Fulcrum - A fixed point or pivot around which a lever or other mechanical device rotates or moves
- Load - The force or weight that is applied to a structure, device, or system

and messages to the audience

- Tableau - A static and silent scene or picture created by actors who freeze in specific poses or positions to represent a moment or concept
- Pantomime - A form of performance where actors use gestures, facial expressions, and body movements to convey a story or narrative without speaking

MATERIALS



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- Lanyards with inserted images of the six simple machines (one image per lanyard)
- [SIMPLE MACHINE HEXATHLON CHALLENGE TASKS - WORKSHEET](#) (one per group of 3 students)
- Pencils
- Timer

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Show the video – [Coca-Cola Music Machine: "I'd Like to Buy the World a Coke"](#).
- Ask students to describe what they saw.
 - Ask students what the purpose of the machine was in the video.
 - Discuss what a simple machine is.
- Introduce Rube Goldberg to students.
 - Read the book [Mazie's Amazing Machines by Sheryl Haft](#).
 - While reading the book, explore each simple machine with a body movement. Focus on the shapes that students will make with their bodies and how the shapes will be different depending on the purpose of the machine (i.e., a wedge versus a wheel).
 - After reading the book, ask students which Mazie machine was their favorite and how it made life simpler.

Work Session

SIMPLE MACHINE TABLEAU GAME

- Explain to students that they will be making a tableau demonstrating a simple machine that they learned about in the book.
 - Explain to students that a tableau is a static and silent scene or picture created by actors who freeze in specific poses or positions to represent a moment or concept.
- Give each student a lanyard with the name of a simple machine.
- Have students get in groups of three with students who have the same simple machine.
- Have each group create a tableau of their machine using each group member. Then ask students to “bring it life” and demonstrate how the simple machine works with movement.
- Discuss each machine’s physical attributes and how that impacts its resulting motion (straight, circular, back and forth, fast and slow, and motionless) when force is applied.

INTRODUCE PANTOMIME

- Explain to students that pantomime is a form of performance where actors use exaggerated gestures, facial expressions, and body movements to convey a story or narrative without speaking. Actors use acting and reacting in pantomime.
- Show students a video of pantomime such as [Le Mime Marceau](#) or [Punch & Mimi-Brushing Teeth](#).
- Give students a prompt, such as brushing teeth, to practice pantomime.

EVERYDAY SIMPLE MACHINE TASKS

- Show students pictures of the following activities. Ask them to match them to the simple machines.
 - Wheelchair ramp, skateboard ramp, slide (Inclined plane)



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- Knife, axle, plow, prop to keep a door open (Wedge)
- Lid to a jar, bottle opener, corkscrew (Screw)
- Steering wheel of a car, bicycle pedal (Wheel and axle)
- Flagpole with flag, raising and lowering blinds (Pulley)
- Scissor handle, paperclip, clothespin (Lever)
- Discuss how the physical attributes of each machine impacts how it functions.

CLASS HEXATHLON PHYSICAL CHALLENGE

- Introduce hexathlon events to students. These are Olympic-like events that have six different sports or competitions that athletes must perform.
- Tell students that they will create a Pantomimed Hexathlon Class Competition, with each of the six competitions representing the six simple machines.
- Have each group develop a team name.

DEVELOP GAMES

- Students should focus on creating body shapes that reflect the simple machine.
- Next, have students develop a pantomime for their machine.
 - Tell students that it should have a beginning, middle, and end movement. This will help clarify and slow down the movements to avoid an overall general movement that does not show distinct parts.

LET THE GAMES BEGIN

- Set the stage by playing Olympic music.
- Invite each group to perform their machine.
- Have students in the audience identify which simple machine each task used.
- Discuss how students' body shapes were different based on the machine and the task it was intended to complete.

Closing/Reflection

- Facilitate a class discussion that reflects on the following questions:
 - How can you use simple machines in your life to make everyday tasks easier?
 - Can you design a machine in your house or community to help someone in need? Which simple machines would it use?
- Have students draw a diagram of the beginning, middle, and end of their machine pantomime.
- *If applicable, students should reflect and write about their machines and their process in designing them in their STEAM journal.*

ASSESSMENTS

Formative

Teacher will assess students by:

- Circulating the room assessing students' understanding of the simple machine movements. **Adjust and correct students as you encounter movements that do not reflect the simple machine.*
- Asking questions to determine if students' bodies match the simple machine movements.
- Asking specific questions about the body shapes students use to represent the machines.



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Summative

CHECKLIST

- Students can accurately bring simple machines to life with their bodies using pantomime and tableau.
- Students can draw a diagram of the beginning, middle, and end of each task pantomime with labels of simple machine names as well as any related vocabulary.
- Students can explain the relationship between an object's physical attributes and its resulting motion.

DIFFERENTIATION

Accelerated:

- Have students videotape their group, introducing and enacting their Hexathlon competition machines on Flip Grid or another recording application.
- Have students pantomime multiple simple machines (or all six), instead of just one.

Remedial:

- Instead of individual groups pantomiming their own simple machines, the class can pantomime the six simple machines together.
- Focus only on the simple machines that use push and pull.

ADDITIONAL RESOURCES

- **Simple Machine Books:**
 - [Mazie's Amazing Machines by Sheryl Haft](#)
 - [The Most Magnificent Thing by Ashley Spires](#)
 - [Just Like Rube Goldberg: The Incredible True Story of the Man Behind the Machines by Sarah Aronson](#)
- **Simple Machine Video:**
 - [VIDEO - Coca-Cola Music Machine: "I'd Like to Buy the World a Coke"](#)
- **Pantomime Videos**
 - [Le Mime Marceau](#)
 - [Punch & Mimi- Brushing Teeth](#)

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*

Ideas contributed by: Susie Spear Purcell. Updated by: Katy Betts.



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