

Subject Integrative STEM	Grade Level Preschool: age 5
PA Core Standards Science and Technology and Engineering Education PA Standards • 3.2.PK.B1: Explore and describe motion of toys and objects. • 3.3.PK.A7: Participate in simple investigations to answer a question or to test a prediction. ◦ Use the five senses and simple equipment to gather data Math • 2.4.PK.A: Describe the process (es) (e.g., think aloud) related to problem solving situations. English/Language Arts • 1.4.PK.A: Write, dictate or illustrate to convey ideas for a specific purpose. • 1.6.PK.A: Listen attentively and respond in conversation. • 1.6.PK.B: Speak in simple sentences. Share experiences when asked. • 1.9.PK.A: Use age appropriate technology, with adult assistance Geography 7.1.PK.A: Explain how a map is a representation of places. History: 8.1.PK.A: Identify a sequence of events through a day. Reading, Writing, Speaking, and Listening PA Standards • 1.4.PK.A: Write, dictate or illustrate to convey ideas for a specific purpose. • 1.4 PK.B: With prompting and support, draw/ dictate about one specific topic. • 1.4.PK.B: Write, dictate, or illustrate to communicate information. • 1.6.PK.A: Listen attentively and respond in conversation. • 1.6.PK.B: Speak in simple sentences. Share experiences when asked.	
Objectives: • students will be able to respond to basic comprehension questions while read the book <u>Tikki Tikki Tembo</u> • students will understand that countries, in this case USA and China, can be found on a globe • Students will, with the teacher’s help, be able to create their own pulley. • Students will understand how pulleys make it easier to lift an object.	

- students will be able to describe what a pulley is
- students will be able to give an example of a pulley
- all students will correctly be able to draw a pulley in their “Simple Machines” flipbook at the end of the lesson

Materials:

- book Tikki-Tikki Tembo, by Arlene Mosel
- several water bottles
- rope
- broom
- small bucket with a handle
- globe
- “Simple Machines” flipbook
- crayons

Lesson Activator (Set Purpose)

- read class the book Tikki Tikki Tembo
 - before reading the book, explain that the story takes place in China a long, long time ago
 - have a globe and show the class where China is on the map
 - first show them where USA is so they have an idea of where they are, and where they are in comparison to China
 - in this book, a boy fell down a well. The idea of wells will then relate to pulleys
 - on the page where it states that the ancient Chinese did not use nicknames, ask the students if any of them have a nickname. Have the students share with the class
- the teacher will then explain how pulleys make it easier to pick up water
 - invite students to try picking up a bucket filled with several water bottles, using only their hands
 - ask students to describe how it was to try to pick it up
 - “Was it very easy to pick up the bucket?”
 - “Did it feel light? Or heavy?”

Body of Lesson

- teacher asks the students how the well in the book made it easier for people to pick up a bucket of water
 - “you just picked up the bucket with your hands. What’s different about how Tikki Tikki Tembo’s friends lifted him up in the bucket?”
 - “Do they pick up the bucket? Why not?”
 - “How is it easier to pull the rope instead?”
 - “Do you think we can try that too, to pick up our bucket?”

- “I have a broom a rope. how can we make our own well in our classroom? We can use anything inside the room too.”
- teacher will help the students create their own “well” with a pulley
 - put the broom across 2 cabinets or desks
 - tie the rope to the handle of the bucket, and hang the other end of the rope across the broom handle
 - invite students to try to pull the other side of the rope to lift up the bucket of water bottles
- teacher asks the students how it was to “pick up” the bucket by pulling the rope instead
 - “Was it very easy to pull the rope to pick up the bucket?”
 - “Was it easier to pick up the bucket with your hands or with the rope?”
 - “Why do you think that is?”

Lesson Summarizer (Closure & Wrap-Around to Purpose)

- teacher tells the class that what they built is called a pulley. A pulley is a simple machine that can make it easier to pick something heavy up, like a bucket of water bottles
- teacher asks the class to think of other pulleys that they see
 - ex flagpole and construction crane

Formative or Summative Assessment of Student Learning

- students will draw a picture of the pulley well that they made in their “Simple Machines” flipbook
- students will come back to the circle and all share the pictures that they drew with the rest of the class
 - at the time teacher will be able to observe what they drew, and how well they understand pulleys
- throughout the lesson the teacher will observe the students to make sure that they understand the pulley

References

<http://education.nationalgeographic.org/activity/simple-machine-challenge/>