


Lesson Title: The Next Great Toy Inventor!			
Grade Level: 2 nd		Quarter: 2	
Standards: S2P3. Students will demonstrate changes in speed and direction using pushes and pulls. a. Demonstrate how pushing and pulling an object affects the motion of the object. b. Demonstrate the effects of changes of speed on an object. S2P1. Students will investigate the properties of matter and changes that occur in objects. a. Identify the three common states of matter as solid, liquid, or gas.			
Lesson Essential Question: EQ: How can I create a new toy that can be pushed or pulled?		Vocabulary: Motion, speed, direction, push, pull, speed, demonstrate	
Lesson Materials	<ul style="list-style-type: none"> • scissors • rulers • safety snips • hole punch • crayons/markers • fabric scraps • glue • tape 	Lesson Assessment: Student Journal Teacher Observation Student created invention	
STEM Challenge Overview: Children all over the world have many things in common. They all need food, shelter, and clothing. All children play. Many children create their own toys with things they find in their environment. This leads to the invention of many homemade toys.			
Teacher Background: The students have learned all about different types of matter			
INSTRUCTION			
1. Ask/Engage			
<ul style="list-style-type: none"> • Show the video of children inventors from the Ellen show: https://www.youtube.com/watch?v=QR_CfFuDWQ8 • After watching tell the students that they are all going to become inventors in their next STEM challenge! • Read the Challenge <p>The Toy Inventor’s Workshop needs your help! In an effort to become more eco-friendly, they are trying to make new toys out of recycled objects. Your challenge is to design and build a homemade toy that two to four children can play with together. Use as many recycled materials as possible. Your toy must use a push or a pull as part of its design.</p>			
2. Imagine/Brainstorm			
<i>Introduce the constraints of the design plan. Define the criteria for success. Ask each student to work independently to come up with 1-2 possible design solutions. Students should draw/label their designs.</i>			
3. Plan/Design			
<i>Each student presents their ideas to their team. Student teams collaborate to come up with final design plan. Students draw final design plan and make a list of needed supplies.</i>			

4. Create / Test

Student teams build their design according to their design plan. Students test their design plan and record data.

5. Evaluate/Improve – and repeat Steps 1-5

Students evaluate their design for success. Did it meet the established criteria? Did their final design match their planned design? How would students improve their design?



Name _____

Title of STEM Challenge
_____ Grade

Description of STEM Challenge

Challenge:

Criteria:

- 1.
- 2.
- 3.
- 4.

Constraints:

- 1.
- 2.
- 3.
- 4.

Materials:

1. **ASK / ENGAGE:** What is the problem you are being asked to solve?

2. **IMAGINE/BRAINSTORM:** What are some possible solutions to the problem that you are trying to solve? After you brainstorm, draw and label your ideas below.

<p style="text-align: center;">Idea #1</p>	<p style="text-align: center;">Idea #2</p>
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3. **PLAN/DESIGN:** Share your ideas with your group and collaborate to decide on a final design plan. Draw your team's design below and make a list of the materials that you will need to complete your design.

<p style="text-align: center;">Team Design Plan</p>	<p style="text-align: center;">Materials List</p>
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4. **CREATE/TEST**: Use your Final Design Plan to create and build your solution. Test your design. Did it work? Why or Why not?

5. **EVAULATE/IMPROVE**: How well did your design work? Did your solution solve the problem within the given constraints?

How can you improve your design? How can you make it better? Draw and label your improved design below.

Improved Design Plan

