<table>
<tr><td>Lesson</td><td colspan="2">Build an engineering argument to select an appropriate material for making rain jackets.</td></tr>
<tr><td>Learning Objectives</td><td colspan="2">Students should be able to:
Plan and Conduct tests to study material property
Evaluate textual information to study material characteristics
Argue for a material using evidence from investigation data and text.</td></tr>
<tr><td>Practices</td><td colspan="2">Plan and Conduct Investigation
Read and Analyze text
Engage in argumentation</td></tr>
<tr><td>Curriculum Placement</td><td colspan="2">The lesson was a part of one month long integrated Science-Engineering Unit. The Unit started with a series of lessons where students explored the concept of material properties, investigated observable properties for different materials, and explored the concept that an object can be disassembled into smaller parts. In the next lessons, students explored what is engineering? And saw videos to explore what are some jobs that engineers do. This lesson was done next, followed by two more engineering lessons that focused on importance of testing and revising based on failures.</td></tr>
<tr><td rowspan="2">Lesson Flow</td><td>Day 1</td><td>Introduce the design problem: Decide an appropriate material for rain jacket.
Unpack the problem: Discuss, how do we decide which material works the best? Students think of material properties that can help decide a material.
Investigate material behavior: Plan and Conduct tests on given materials, to find which of those are waterproof.</td></tr>
<tr><td>Day 2</td><td>Analyze textual information to learn about materials: Engage students in reading text and analyzing he information, to help seek additional information on material properties and wat materials are used for making rain jackets.
Preparing an argument: help students connect data from investigation and texts, and help use it as evidence to make decisions about material choices
The Final argument: Facilitate a whole class discussion session, where groups of students argue for the choice of material based on evidence from data collected.</td></tr>
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My Material Choice Card

NAME: _____

I would like to use _____,

because_____

_____

_____

_____.

Investigating Material Behavior

Group Members: _____

What do we do?

1. Select one material from the given set
2. Wrap the dog, with material 1
3. Fill two syringes with water
4. Pour the water from syringes onto the dog, one at a time
5. Wait for 30 seconds (use the stopwatch)
6. Place the dog on the dry tray and unwrap it.
7. Make observations. Is the dog wet? Is the dog dry? What do you see? Write in the table for Material 1 below
8. We will repeat this above for different materials.

Material 1: _____	
What did you observe, after your unwrapped the dog?	

Material 2: _____	
What did you observe, after your unwrapped the dog?	

Material 3: _____	
What did you observe, after your unwrapped the dog?	