

Essential Questions	What is energy? How can energy be transferred? What kinds of energy do we use every day?
Enduring Understandings	Energy is the ability to do work Energy can be transferred chemically, thermally, electrically, mechanically Energy is used all around us in almost all aspects of our lives
Vocabulary	Energy, transfer, motion
NGSS	4-PS3-2. Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.[Assessment Boundary: Assessment does not include quantitative measurements of energy.]
Day 1 Objective	I can understand how energy is all around us
Lesson	<p>Warm Up:</p> <ul style="list-style-type: none"> You have been learning about all kinds of energy with Ms. Hoover in science class. Can you share what kinds of energy you have learned about? <ul style="list-style-type: none"> TURN AND TALK then have 3 students share Today, you will be reading about where energy is used and how it is used in all kinds of places. <p>Mini-Lesson:</p> <ul style="list-style-type: none"> Each table will get 4 books, energy in the home, airport, sports arena and in the factory. You will have 5 minutes to skim through each book. Please take the entire 5 minutes to focus on only ONE of the books. While you are skimming, you will create a thinking map! If you are looking at the different kinds of energy in different places, what kind of map do you think you'll want to make? (Quadruple bubble to compare/contrast or could make 4 different circle maps) You will be using this thinking map to design a poster with a team to present to the class about how energy is used in ONE of the assigned places so make sure you have good information for all 4 because you don't know what place you'll be assigned <p>Closure:</p> <ul style="list-style-type: none"> Have a few students share out what they learned if time. Collect thinking maps to assign groups for tomorrow
Homework	NONE
Day 2 Objective	I can understand how energy is all around us
Lesson	<p>Warm Up:</p> <ul style="list-style-type: none"> Going to be working in teams to design and create a poster to represent the kinds of energy used in your location Later on in this science unit, we will be assigning specific roles for each student but today you all really need to work collaboratively and cooperatively as a team to get the poster done Posters need to include: TITLE & names, at least 3 ways energy is used in your location along with 3 corresponding sketches SPLIT UP THE WORK <p>Closure:</p> <ul style="list-style-type: none"> Teamwork self assessment
Homework	NONE

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<p>Vocabulary</p>	<p>Energy, transfer, motion</p>
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<p>Day 3 Objective(s)</p>	<p>I can present information to my peers about the types of energy used in different locations.</p>
<p>Lesson</p>	<p>Warm Up:</p> <ul style="list-style-type: none"> ● review student collaboration ● celebrate what they know about energy ● remind that energy is all around us, it is what makes life as we know it possible. <p>Procedure:</p> <ul style="list-style-type: none"> ● Break students into groups before starting expectations <ul style="list-style-type: none"> ○ Allow 3-4 minutes to delegate each part of the poster ○ Reinforce teamwork motives & COLLABORATIVE LEARNERS ● Go over expectations ● Factory will present first, sports arena go to back, home to front and half of airport to each ● Airport, sports arena back, home to front and half of factory to each ● Sports arena, home to back, factory to front and half of airport to each ● Home, airport to front, sports arena to back and half of factory to each <p>Closure:</p> <ul style="list-style-type: none"> ● If time, ask students what they learned ● Pass out reflection papers (exit ticket)

Day 4 Objective	I can work with pennies to develop questions and predict what happens when objects collide.
Lesson	<p>Warm Up:</p> <ul style="list-style-type: none"> ● Going to do an experiment with pennies to demonstrate the transfer of energy ● First, assign roles & review each one <ul style="list-style-type: none"> ○ Materials manager: in charge of gathering materials and returning them ○ Task manager: keeps group on task RESPECTFULLY ○ Recorder: write/draw observations ONLY PERSON WRITING ○ Reporter: responsible for sharing their findings with the class at the end of activity ● Emphasize that all groups need successful roles in order to get the most out of activity <ul style="list-style-type: none"> ○ Connect to COLLABORATIVE LEARNERS ● Go over the observation sheet <p>Procedure:</p> <ul style="list-style-type: none"> ● Each table gets 7-10 pennies ● Model how to flick/push the pennies into one another ● Pay special attention to how the other pennies move/don't move if they are hit ● Move into groups & roles ● GIVE STUDENTS 5 MIN TO GENERATE HYPOTHESIS ABOUT HOW THE PENNIES WILL REACT/MOVE <ul style="list-style-type: none"> ○ Share hypothesis ● Go over how to SAFELY push the pennies ● Throughout remind to be filling out lab sheet <p>Closure:</p> <ul style="list-style-type: none"> ● Each group should share an observation they made and their conclusion ● Fill out teamwork self assessment <p>Review results and conclusion together.</p>

Day 5
Objective

I can work with ice cubes and different colored paper to develop observations that prove that energy can be transferred from the paper to an ice cube.

Lesson

Warm Up:

- We are going to continue exploring energy transfer today!
- Review roles & teamwork expectations
- Today we will be working with different colored paper and ice cubes to demonstrate the transfer of energy!
- Before we get started I want to talk about how heat is absorbed differently by different colors
 - Imagine it is a hot summer day and you are going to go to the zoo where you will be outside a lot
 - You have to decide between a black t-shirt and a white t-shirt, which one would you pick?
 - Talk to someone next to you about what shirt you would pick
 - You would pick the lighter one because white REFLECTS heat & black ABSORBS heat
 - All colors absorb heat but the darker they get the MORE heat they absorb
- COUNT OFF BY 7 and get into groups
 - Assign roles once in groups

Procedure:

- Keep what we talked about before in mind when working on this experiment!
- You are going to take 2 colored pieces of paper at a time and place an ice cube on each one
- On your lab sheet keep track of which ice cube completely melts first
- Before we pass out the materials, I need you to work as a team to generate a hypothesis about what will happen to the ice cubes on different colored paper
 - Give 5 min to create hypothesis
- Pass out materials, put ice in cups for transport
 - Start with black & white paper
 - Purple & pink
 - Yellow & blue
 - Green & red etc.

Closure:

- Have students create conclusions
- Discuss as a whole class where the energy came from for the ice to melt
 - The paper, air but darker paper absorbed more of the heat from the sun/lamp
- If you were trying to melt an object with another object what colors might it be for it to melt faster?

<p>Day 6 Objective</p>	<p>I can work with various materials to make observations that energy can be transferred from one object to another.</p>
<p>Lesson</p>	<p>Warm Up:</p> <ul style="list-style-type: none"> ● Review procedure and roles ● Today groups will be random & students will have to pick their roles within their groups ● The past few days we have been working with various materials to see where/how energy can be transferred from one object to another ● Today, you are going to work with different sports equipment in order to see how energy is transferred! <p>Procedure:</p> <ul style="list-style-type: none"> ● Count off by 7 to form groups ● Once in groups allow 3-4 minutes for students to assign roles within groups ● Give each group a basketball & tennis ball ● Show them how to appropriately bounce them (outside?) ● With yard sticks measure how high they bounce individually ● How can we make them bounce higher? <ul style="list-style-type: none"> ○ Drop them higher ○ You are putting more energy into the balls when you bounce them higher ● How could we transfer energy from one ball to the other? <ul style="list-style-type: none"> ○ Hit them with each other ○ Bounce on top of the other ● Take note of how high they bounce <p>Closure:</p> <ul style="list-style-type: none"> ● Review conclusions together ● Have we noticed any patterns this week with energy being transferred? <ul style="list-style-type: none"> ○ Think back to pennies, how did the others react the harder you pushed the penny? ○ Think back to ice cubes, what ice melted faster? ○ And this experiment, what happened when you bounced the balls on top of each other? ○ THE MORE ENERGY YOU PUT INTO THE ORIGINAL OBJECT THE MORE IT WILL IMPACT THE OBJECT THE ENERGY IS BEING TRANSFERRED TO