



Energy Stores Lesson 1 Teaching Ideas

Learning Objective: To understand that there are different types energy stores and energy transfers.

Success Criteria:

- To list the different energy stores.
- To describe the energy store before and after a change, and the energy transfers involved.
- To state and explain what is meant by conservation of energy.

Context: This is the first lesson of the energy topic and focuses on the different types of energy stores and transfers.

Resources

[Lesson Pack](#)

candle
matches
battery operated torch
toy car
ramp
pendulum
Newton's cradle
hair dryer
battery
wires
bulb (to make a simple circuit)

Starter

What's the Connection?

A series of different pictures appear and pupils are asked, 'What's the Connection?'

Answer: **energy stores**

Main Activities

Slides 4-7: Different Energy Stores

These slides inform pupils of the different energy stores and how energy can be transferred.

Slides 4-5 show the 5 different energy stores and contain a quick assessment to ensure pupils are confident at recognising the stores in everyday devices or situations.

Slide 6 informs pupils of the key idea that energy can be transferred between stores. There is an example of a person eating food (chemical store) and it states how it can be transferred to kinetic store (movement), thermal (maintaining body temperature) and chemical (making different compounds).

Slide 7 illustrates the way energy can be transferred from store-to-store and the example of a battery fan is included, stating the energy stores and energy transfers.

Before moving onto the next activity, pupils need to be confident at stating energy stores and energy transfer methods.

Slides 8-11: Energy Transfer Experiments

A series of small experiments should be set up around the classroom (suggested activities are given on slide 10, but you could change these). Pupils move around the room in a carousel style activity. At each experiment, they should identify the energy stores and energy transfers. Results are recorded on the

Slide 9 reminds pupils of the key energy stores and the energy transfers.

Answers to the experiments are provided on slide 10.

A quick assessment with answers is included on slide 11.

Slides 12-14: The Law of Conservation Energy

Slide 12 introduces this law to the pupils and encourages them to think what it could mean. You might want to ask the pupils to first think what conservation means; this should enable them to think of plausible answers. This in turn could open up some interesting discussion! Slide 13 shows the pupils what the law is – were any of them close? What do they think about energy never being destroyed? You could ask them to think about the basic example of eating a meal: what happens to the food once it leaves their bodies? Where does it go? What is it being used for? Slide 14 asks the pupils to make a note of the law and apply it to one of the experiments they have just carried out.

Plenary

Slide 15: Sum It Up!

Ask pupils to try and sum up the lesson in 5 keywords. Possible answers could be: energy stores, energy transfers, kinetic, thermal, gravitational potential, elastic, chemical, light, sound, electrical, mechanical, Law of Conservation.

For an extra challenge, ask them to explain their keywords in their own words.

Homework

Slide 16:

Ask pupils to go around their homes and choose 5 different devices. For each one, they should state the energy stores and energy transfers.

Extension: Can you find examples that include all the different types of energy stores and energy transfers?

An [Energy Stores Homework Sheet](#) is available for students to record their results.

Safety

Matches and candles need handling with care.

Ensure there is plenty of room to swing the pendulum, you may want pupils to wear goggles.

Teacher Information

Energy Stores and Transfer Suggested Experiments:

1. light a candle;
2. battery operated torch;
3. toy car rolling down ramp;
4. pendulum;
5. hair dryer;
6. simple circuit with a switch (it may be best to have this already made);
7. Newton's Cradle.

These are a few suggestions and it is possible to include many others depending on the equipment available within the school.

A set of _____ can be found in the lesson pack.

Energy Stores and Transfers Results Table

Experiment	Energy Store at the Start	Energy Store at the End	Energy Transfer
lighting a candle			
battery operated torch			
toy car rolling down a ramp			
pendulum			
hair dryer			
simple circuit			
Newton's cradle			



Energy Stores

Homework

Go around your home, choose 5 different devices and for each one state the energy stores.

Device	Energy Store at the Start	Energy Store at the End

Remember the energy stores are:

Chemical, thermal, kinetic, gravitational potential, elastic.

Energy Stores and Energy Transfers

Extension Homework

Go around your home, choose 5 different devices and for each one state the energy stores and energy transfers.

Device	Energy Store at the Start	Energy Store at the End	Energy Transfer

Energy

Energy Stores



Learning Objective

- To understand that there are different types energy stores and energy transfers.

Success Criteria

- To list the different energy stores.
- To describe the energy store before and after a change, and the energy transfers involved.
- To state and explain what is meant by conservation of energy.

What's the Connection?



e s

?

Different Energy Stores

chemical

kinetic

gravitational potential

thermal

elastic

Quick Assessment: Different Energy Stores

Match the images below to their energy store.

chemical burger

kinetic cheetah

gravitational potential parachute

thermal candle

elastic rubber bands



Different Energy Stores: Transfers

When you eat food, this is a chemical store.

You transfer the energy into different stores.



Kinetic stores: when you move.

Thermal stores: to maintain your body temperature.

Chemical stores: when you make different compounds in your body.

Different Energy Stores: Transfers

Now we know the 5 different energy stores.

Energy can be transferred between stores as electric, light, sound or mechanical (when a force acts on the object).

For example, a battery operated fan.

The energy stores move from chemical to kinetic.

Energy is transferred as electrical energy.



Energy Transfer Experiments

You are going to identify the energy stores and energy transfers in different experiments.

As you move around the classroom, stop at each activity. You should do the following:

- Identify the energy store at the beginning;
- the energy store at the end;
- the energy transfer;
- record your results.

Energy	Energy Store at the Start	Energy Store at the End	Energy Transfer

Remember!

Energy Stores

chemical

thermal

kinetic

gravitational potential

elastic

Energy Transfers

electric

light

sound

mechanical (a force is acting on the object)

Energy Transfer Experiments

Energy	Energy Store at the Start	Energy Store at the End	Transfer
lighting a candle	chemical	thermal	light
battery operated torch	chemical	thermal	light
toy car rolling down a ramp	gravitational potential	kinetic	sound
pendulum	gravitational potential	kinetic	mechanical
hair dryer	chemical (burning fuel at power station)	kinetic	sound
simple circuit	chemical	thermal	electrical
Newton's cradle	gravitational potential	kinetic	sound

Assessment

What is the main energy transfer taking place in a solar powered calculator? (1 mark)

light

What are the energy stores involved when using a camping stove? (2 marks)

chemical

thermal

What are the energy stores and pathways involved when turning on an electrical radio? (3 marks)

Energy stores:
chemical (at the power station); thermal.

Energy transfers:
electrical and sound.

The Law of Conservation of Energy

What do you think this is?



In pairs, you have 2 minutes to come up with an explanation.

Share your idea with the pair working next to you.

Do they have any different ideas?

Do you want to change your explanation?



The Law of Conservation of Energy

'Energy cannot be created or destroyed, but is transferred from one store to another.'

In all of the experiments, there was an energy store at the beginning and an energy store at the end.

The only thing that changed was the amount of energy in the stores.



The Law of Conservation of Energy

'Energy cannot be created or destroyed, but is transferred from one store to another.'

Copy the title and law into your book.

Choose one of the experiments and explain how it reflects the Law of Conservation of Energy.



Plenary: Sum It Up!

Sum up today's lesson using 5 keywords.

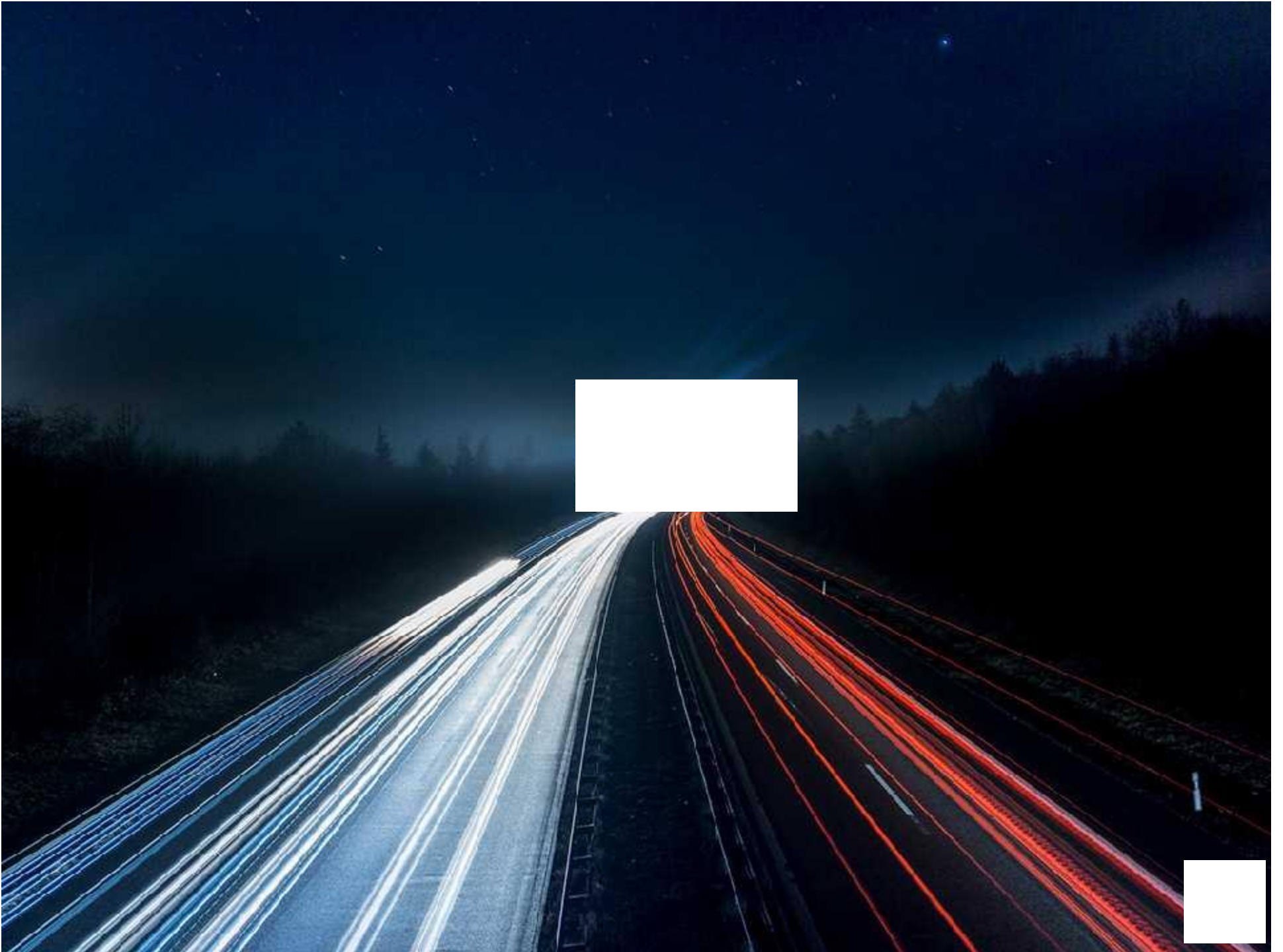


Homework: Energy Stores and Transfers in the Home

Go around your home and choose 5 different devices. For each one, state the energy stores and energy transfers.

Extension: Can you find examples that include all the different types of energy stores and energy transfers?





Experiment Instructions

1

Candle Experiment

- Use the matches and carefully light the candle.
- Record the energy stores.
- Remember to blow out the candle before you move on to the next experiment.



5

Hair Dryer

- Switch the hair dryer on and off.
 - Record the energy stores.
- Remember the 5 energy stores, it must be one of these!



2

Battery Operated Torch

- Switch the torch on and off.
- Record the energy stores.

3

Toy Car and Ramp

- Place the toy car at the top of the ramp.
- Record the energy store.
- Give the car a gentle push so it rolls down the ramp.
- Record the energy store.

4

Pendulum

- Lift the pendulum until it is at a right angle with the stand (do not let go).
- Record the energy store.
- Gently release the pendulum and let it swing.
- Record the energy store.

6

Simple Circuit with a Switch

- Use the switch to light up the bulb.
- Record the energy stores.
- Remember to switch it off before you go the next experiment.

7

Newton's Cradle

- Pull back one ball and release.
- Record the energy stores.

