Year 6: Science and Mathematics

Lesson Plan 2: Energy Sources and Receivers

Introductory Activities (Engage)

(5 minutes each)

As a class group explore and mind map:

- The students understanding of energy.

Create a mind map on whiteboard that is used throughout lesson.

Energy Words	
Kinetic Energy (energy of motion)	Potential Energy (stored energy)

Have a class vote:

- Does a marble have energy?

Lesson 1 (Explore)

(15 minutes)

Energy is described as the ability of matter or radiation (light) to do work. Energy can neither be created nor destroyed. It can only be transformed (changed) from one form to another.

Materials	Quantity
Tennis ball.	1
White board or Butchers Paper	1
Packet of whiteboard markers	1
AS1 Does a marble have energy?	1

The forms of energy include:

- Light energy. Example; the sun,
- Heat energy. Example hot coffee heating a cold mug.
- Magnetic energy. Example; an MRI machine, a magnet.
- Chemical energy. Example; petroleum, wood, batteries, food.
- Kinetic energy (*energy of motion*). Example; bicycle rolling down a hill, water, turbine in a hydropower station.
- Potential energy (*energy of position or stored energy*). Example; a coiled spring (elastic potential energy), water behind a dam (gravitational potential energy).
- Electrical energy. Example; Lightning, electrical charges moving through a wire or electricity.
- Sound energy. Sound from the vibration of plucking a guitar string.
- Nuclear energy. Energy released by splitting or fusing atoms.

Electricity is not 'made' in a power station. A power station only transforms or changes a form of stored energy (potential energy) into electrical energy (electricity).

Exploratory Activity (15 mins)

Focusing on potential and kinetic energy. Hold a tennis ball up high.

Use the tennis ball to reinforce that learning. Have the students describe the energy transformation when the ball is held and released.

Explain that students are going to conduct an experiment in pairs to find out more about forms of energy (AS1 Does a marble have energy?). Remind them to add to the mind map as they learn.

Demonstrate the experiment without letting the marble roll. Ask the students to predict what they think will happen and share this with their partners.

Before students investigate, encourage them to plan, the following questions may assist:

1. What is it they want to find out?

2. What questions they would like to answer?

3. How will they work together?

4. How will they record their results?

Students will need to share the roles of conducting the experiment, taking notes and observing.

Options for assessment and extension

	Activity
SCIENCE **Science & Understanding** **Individual Activity**	Investigate different types of energy and transformations we experience in everyday life. Provide descriptions and examples of each in the form of a poster. Present findings to the class.

Elaborate and Review

As a class group review:

What have you learnt?

Encourage students to revisit their original statements and mind maps and make additions and changes where necessary.

1. In what ways can energy be used to do work for us? (Stored and used).
2. In what ways can energy transformations and transfers be controlled to do work for us?
3. How do we know when energy is transformed?
4. How have your ideas changed?
5. What other questions come from your investigations?