

1.1 Spot the energy?

Lesson outcomes

At the end of this activity students will be able to:

- recognise when energy is being transformed in different situations
- identify different energy stores at the beginning and end of processes and events.

What ideas might your students already have?

- students may not be familiar with identifying energy in everyday situations.
- students may tend to associate energy only with living things.
- students may tend to associate energy only with movement.
- students may only equate energy with fuel.

Key vocabulary:

Energy, kinetic energy, potential energy, heat, temperature, conservation

Equipment list

Each CLASS will require:

Eight stations comprising a learning centre with different energy transfer phenomena. These are most effective if they are simple.

They might include: simple wind-up and battery-operated toys; candle; torch; wind-up torch; ball rolling down a slope; simple pendulum; melting ice block; spring on hook; drum; toy guitar; baking powder, weak acid (vinegar) and test tube. Build a nice collection that can be used and added to each year.

Each station should be labelled so students can identify it in their **Notebook**.

Each STUDENT will require:

- access to *Student Digital Activity 1.1*
- **Notebook**

Things to consider

You will need a plan to ensure groups progress around the activities. If you have more activities than groups, this can be self-paced, although check groups don't get stuck on an activity. If the class is large, you may need time limits so all groups move on at the same time.

Ensure each form of energy is represented in at least one station. These should include: sound, light, kinetic energy, potential energy, chemical, electrical, heat.

In this first activity students may not use all terms correctly. They may use the word *gravity* to explain why a ball has the energy to roll down a slope. This can be accepted at this stage as a general idea and refined in later activities. This may be true for other words students offer.

Teacher content information

In identifying energy we often refer to different energy forms. This can imply that energy is a material substance. We can also refer to energy stores. For example, a moving object has energy stored as movement.

Key Ideas:

- Energy is involved when changes occur or things happen.
- Energy can be stored in different ways.

Lesson plan

As you teach:

Step 1: Students undertake *Student Digital Activity 1.1*, which provides a simple introduction to different energy forms and transformations. This could be a simple homework exercise.

Step 2: Students will observe a range of objects, each involving energy. Explain to students that it doesn't matter if they don't yet use scientific terms; they just need to identify what the energy looks like in that situation.

Step 3: **Brainstorm** with the whole class what sorts of words are commonly used when talking about energy. Note: The **Find out more** link in the *Student Digital* has a comprehensive list of energy types.

Step 4: Instruct students (in pairs or trios) to record their observations in their **Notebook** by writing down the label identifying each activity and listing words they think describe the energy forms they see.

Step 5: Move groups around the stations, ensuring all have time at each.

Step 6: Reform the class to share observations. Ask each group in turn for the energy words associated with each activity, drawing on their **Notebook** entries.

Suggested questions:

Key Question - What features told you energy was involved in each activity?

This asks students to make a generalisation; a general principle or idea linked to a range of observations.

NOTE: Typical answers include; things changing, things happening, things moving. The key idea here is change. Energy transformations always involve observable change.