ENERGY BURST

Aim: To understand energy transfer and energy conservation

1: INTRODUCTION: Examples of Energy
Concept 1: Potential Energy is 'stored' energy and Kinetic Energy is 'moving' energy

Q: What is Energy? Where does Energy go?
A: The simplest definition of energy is "the ability to do work".
Energy is how things change and move. It's everywhere around us and takes all sorts of forms. It takes energy to cook food, to drive to school, and to jump in the air.

Q: Where does Energy go?
A: Energy gets changed from one form to another all the time and helps to power everything! Even us!

Today we are going to talk about **Potential Energy** (which is stored energy) **and Kinetic Energy** (which something has if it is moving)

Q: What gives us energy? **A:** FOOD!

DEMONSTRATION 1:
- Ask some children/a volunteer to do a press up.
- Explain that they have **stored potential energy** in their arm muscles and release it as **kinetic energy** when you move.

DEMONSTRATION 2:
- Ask the children to jump with one leg and then using both legs.
- **Q:** Which gives them the highest jump?
- **A:** The bigger and stronger your muscles are, the more potential energy you can store and are therefore more likely to jump higher when using both legs.

2: STRETCHY SCIENCE – CHILDREN TOLD NOT TO LAUNCH BALL AT OTHER CHILDREN
Concept 2: By tightening/stretching elastic bands we store energy = potential energy. When they begin to unwind/loosen, the energy changes to make our object move = kinetic energy.

DEMONSTRATE 3:
- Take lead in demonstrating how the Cannon Ball works.
- The Elastic Potential energy is released when you let go and the rubber band returns to its original shape.
- Elastic potential energy can be stored in objects other than rubber bands, like springs or balloons.
- All Elastic materials return to their original shape after being stretched or squashed.
- **Q:** Can we launch the foam ball into the bucket?
- Control the activity but make as many children involved as possible (maybe in teams – which team can get the closest to their bucket holder, or even inside the bucket itself?!).

3: MECHANICAL ENERGY: HAND CRANK GENERATORS

Concept 3: Machines that make electricity are called generators. We also call them super power sources.

Q: What is Mechanical Energy?
A: Mechanical Energy is the total amount of potential and kinetic energy that is stored in an object. Mechanical energy = potential energy + kinetic energy.
Objects with mechanical energy are either in motion or have stored energy to do work

DEMONSTRATION 4

- Show the demo hand crank generator.
- This generator is made of 2 parts **– a metal coil** and a **magnet**. One part spins around the other.
- This spinning creates moving electrons in the metal coil.
- A spinning power generator is called a turbo-generator (turbine).
- Hand crank generators can deliver up to 8 watts of electrical power.
- Turbo-generators work only in one cranking direction.

WHOLE GROUP ACTIVITY:

- Show hand crank torch and how it works
- Get the children to stand in a circle or around the class in close proximity of one another.
- Challenge the children to keep the light on whilst passing it around the circle – it's very hard work
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Van De Graaf - Kids generate their own electricity.

TAKE HOME MESSAGE: ENERGY IS NEVER DESTROYED IT JUST CHANGES FROM ONE FORM TO ANOTHER

BEHAVIOUR CHANGE: TO SAVE ENERGY, SWITCH THINGS OFF THAT ARE NOT BEING USED. FOR EXAMPLE, LIGHTS OR PHONE CHARGERS