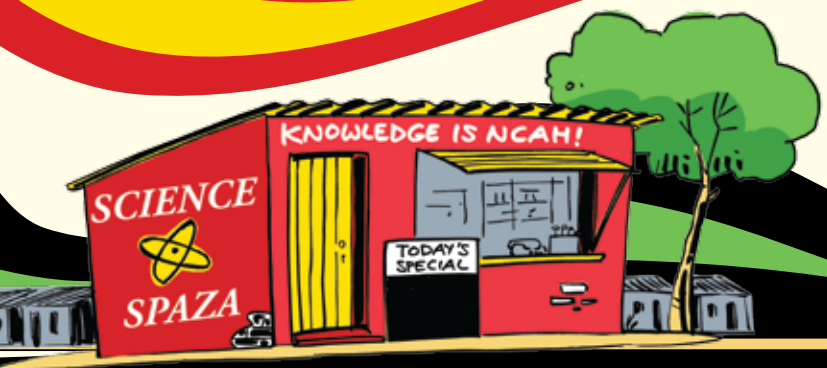

SCIENCE SPAZA

Knowledge is Ncah!

ENERGY

THIS WORKSHEET WILL COVER THE FOLLOWING:

1. Forms of energy
2. What is energy?
3. Transfer of energy (Demonstration)
4. Hydrogen fuel cells

HAVE YOU EVER WONDERED:

1. WHY A BALL BOUNCES BACK WHEN IT HITS THE GROUND?
2. WHY A DOOR BELL RINGS WHEN YOU PRESS IT?

The law of conservation of energy answers all these questions.

ENERGY CANNOT BE CREATED OR DESTROYED, BUT IT CAN BE TRANSFERRED OR TRANSFORMED FROM ONE FORM TO ANOTHER.

Bouncing ball

- As the ball falls to the ground, it gains kinetic energy (energy of motion) and when it hits the ground, the kinetic energy is transformed into elastic energy, causing the ball to bounce back up.

Ringing door bell

- A door bell is connected to an electrical source and as you press it, the electrical energy is converted to sound energy.

There are other forms of energy, which include:

- Heat energy.
- Chemical energy – *Energy stored in the chemical bonds.*
- Potential energy – *Energy of objects due to their position.*

WHAT IS ENERGY?

Energy is defined as "the ability to do work". Energy is an important part of our lives, we use energy when we walk, eat and when we play. Everything contains energy, which can be transferred from one form to another.

DEMONSTRATION: Transfer of energy from one form to another

WHAT YOU WILL NEED:

1 MARGARINE TUB,
COCKTAIL STICKS,
TAPE,
ELASTIC BAND.

WHAT TO DO:

1. Make a boat by sticking the cocktail sticks on the long sides of the margarine tub.

2. Cut a rectangle out of the lid of the margarine tub to make a paddle for your boat.

   Make two holes and cut slits towards the holes.

3. Now, slip the elastic band into the holes through the slits. Hook the elastic band on the two sticks.

4. Now you need a sink or any container big enough to float your boat in.

5. Wind up the paddle, put the boat on the water and let go! The boat will start to move.

WHY IS THE BOAT MOVING?

Winding the paddle stores elastic energy as the band stretches. Once you let go this energy is transferred into kinetic energy causing the boat to move.

HYDROGEN FUEL CELLS

New ways of storing energy are being invented all around the world. One example of these is the hydrogen fuel cell.

How does a hydrogen fuel cell work?

Hydrogen is an energy carrier and this is used in the fuel cell (a fuel cell is like a battery). The chemical energy in the hydrogen is transformed to electrical energy as the hydrogen reacts with a catalyst. The reaction results in the release of electrons which carry electrical energy. This energy can be used for many things, for example, to power a car or a boat.

CURRICULUM LINKS:

- **Knowledge area** – Mechanics
- **Themes**
  - Gravity and Mechanical energy
  - Work, power and energy

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