



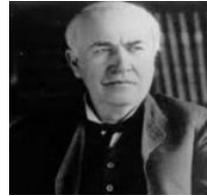
# Cycle A Autumn Term Year 5/6 DT Knowledge Organiser - Electrical Systems

## Key Vocabulary

series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose

## Glossary

|                   |   |
|-------------------|---|
| Circuit           | A collection of components that make an electrical system.  |
| Circuit Component | One of several parts that complete a circuit (e.g. bulb, motor)   |
| Configuration     | How different parts are put together to form an object.   |
| Current           | The flow of electricity   |
| Develop           | Continue to work on something to make progress or improve it.   |
| DIY               | The acronym means 'Do it yourself' and represents various activities that someone chooses to do themselves at home, rather than through a service or professional |
| Investigate       | Research something by looking at it in greater detail   |
| Problem-solve     | Develop and test solutions to an issue.   |
| Product analysis  | To look at an object and evaluate it based on certain criteria (eg. Function).  |
| Stable            | Object does not easily topple over.   |
| Target user       | A particular person at whom the product is aimed.   |



Thomas Edison was a famous American inventor, who is best known for inventing the domestic lightbulb and the electrical power system that enables them to work. He investigated new materials for filament that allowed immediate and long-lasting lighting. He also invented safety fuses and on/ off switches for light sockets.



The most basic types of traffic lights work on a timer system (e.g. giving a minute of green light in each direction) to ensure that there is a consistent flow of traffic in all directions. This works best in places where there is a consistently busy flow of traffic. In some quieter areas, sensor-based traffic signals use monitoring to detect when there are vehicles. Sometimes this is done with 'inductive loop' systems (a coil in the ground that detects the weight of a car), or sometimes with LDR or video camera systems.



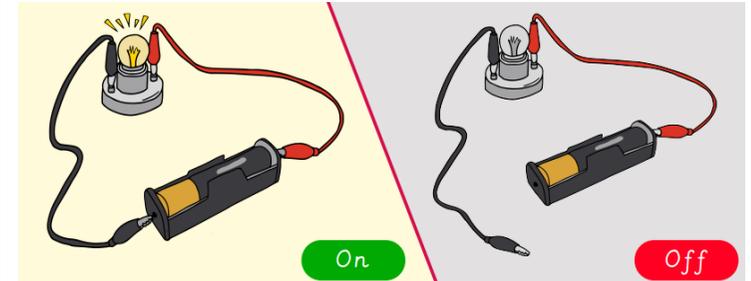
Burglar alarms are another example of a monitoring system. They generally work using micro-switch, LDR, laser, or video camera systems, and can be controlled to act in certain ways (e.g. sounding a buzzer) via a control box

## Learning Objectives:

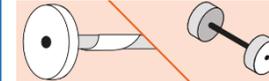
- I can understand how motors are used in electrical products
- I can investigate an existing product to determine the factors that affect the product's form and function.
- I can apply the findings from research to develop a unique product
- I can develop a DIY kit for another individual to assemble their product.

## (Sticky) Knowledge & Skills that I need to remember

Series circuits only have one path for the electrical current to flow.



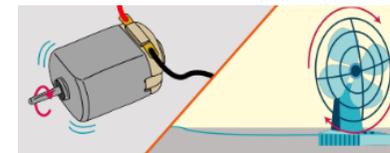
If there is a break in a series circuit, the electrical current will be cut and all the components will stop working. Causing a break in a series circuit can act as a switch to turn off the circuit off.



Axes form part of the wheel mechanism in wheeled products such as toy cars, wheelbarrows and bicycles. For a bicycle to function we need to use our legs and feet to push the pedals that rotate the axle and spin the wheels.



An electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. Motors use electricity instead of human force to move the axle.



A motorised product is an object that uses a motor to function.

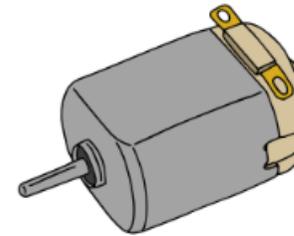
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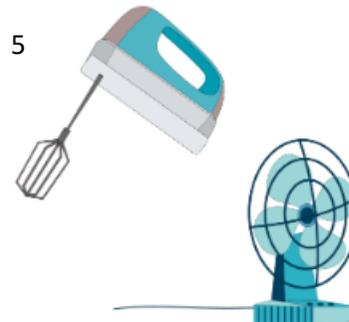
## DT Quiz – Mechanical Systems Year 5-6

1. What is an electrical system?
  - a. A group of parts that transport electricity around a circuit
  - b. A product that is electrical and has an on/off switch
  - c. A telephone pole for sending and receiving phone calls
  - d. A group of products that store electricity
2. What do we mean by product analysis?
  - a. To recolour and design a product to become something else
  - b. To purchase a specific product based on certain criteria
  - c. To develop and improve a product
  - d. To look at an object and evaluate it based in certain criteria
3. What is this circuit component called?
  - a. Switch
  - b. Cell
  - c. Buzzer
  - d. Motor
4. If there is a break in a series circuit
  - a. All components switch on
  - b. Only some components switch on
  - c. All components switch off
  - d. Nothing happens.
5. To investigate something means to
  - a. Recycle and reuse materials to make something new
  - b. Advertise and market something ready for sale
  - c. Write a story about how a product was made
  - d. Research and look at something in greater detail
6. A motor converts
  - a. Human force into electrical energy
  - b. Electrical energy into rotational movement
  - c. Electrical energy into up and down movement
  - d. Electricity into light
7. What do these products have in common?
  - a. Kitchen equipment
  - b. Easy to store
  - c. Powered by hand
  - d. They are motorised

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8. What does the acronym DIY mean?

- a. Designed it yesterday
- b. Did it yesterday
- c. Denmark Italy Yorkshire
- d. Do it yourself

9. Which of the following is not a circuit component?

- a. Paper Clip
- b. Battery
- c. Bulb
- d. Motor.