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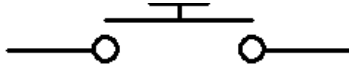

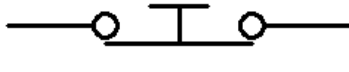

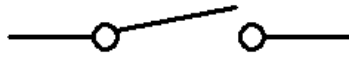

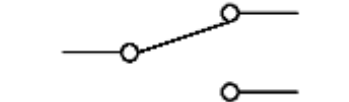

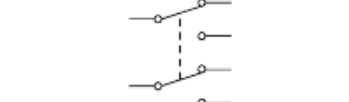

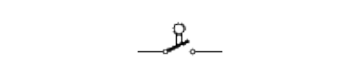

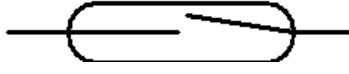

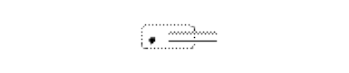


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Supporting the Professional
Learning of School Leaders
and Teachers


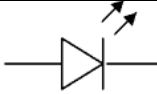



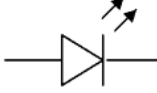

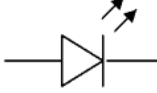

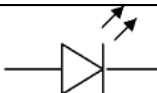

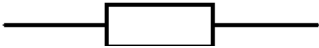
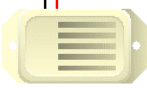









Applied Technology Professional Learning Booklet 2024-2025

- **Session 1:** Through the lens of the fundamentals of electronics, consider teaching approaches to enhance knowledge, understanding, skills and values.
- **Session 2:** Exploring creativity and problem-solving skills through the lens of the fundamentals of electronics.
- **Session 3:** Consider how the use of success criteria can be used in the self-assessment of skills which will aid students in reflecting on their learning journey.

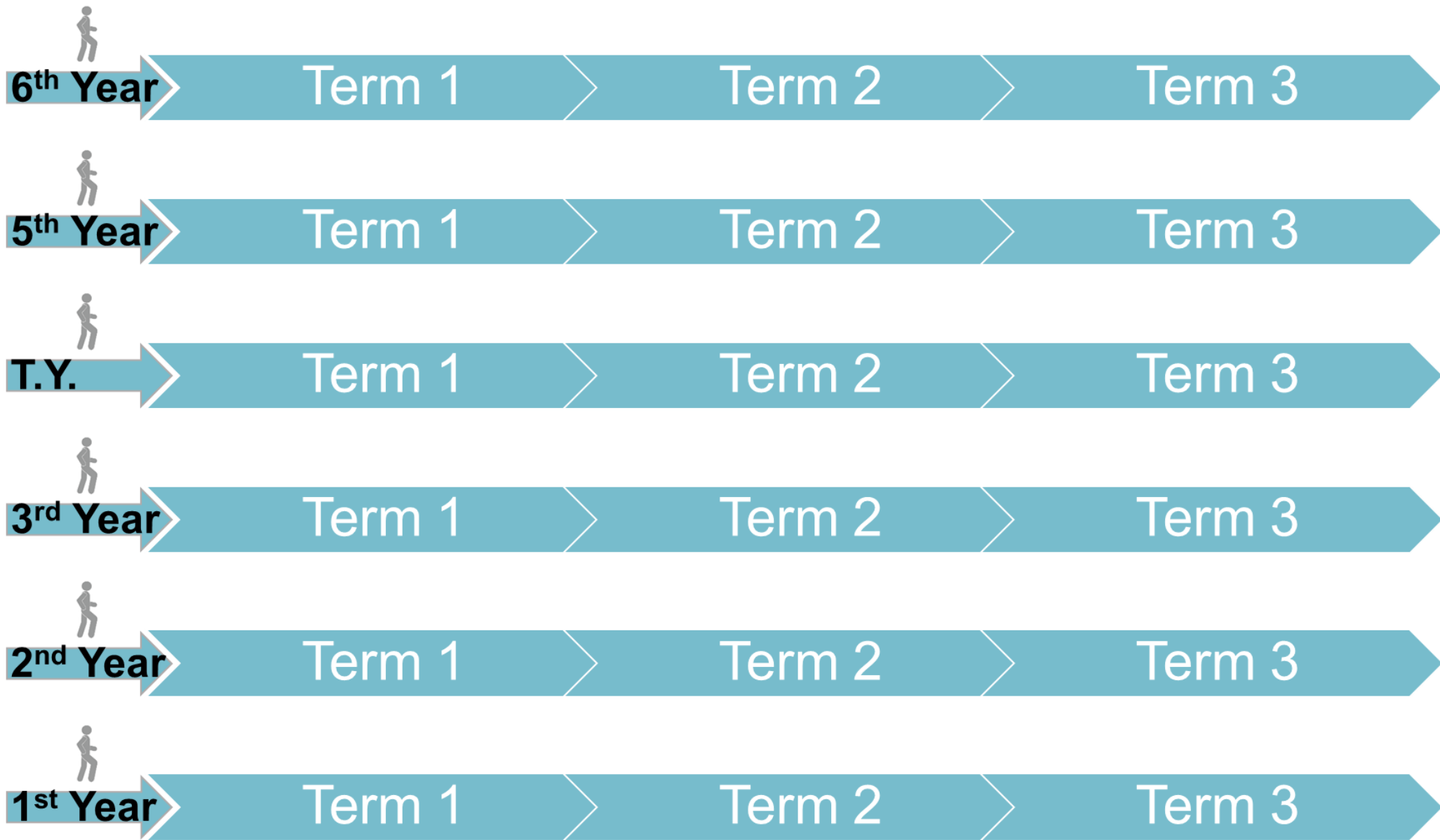
Input Components

Components	Name	Symbol	Description
	Push to Make switch (PTM)		allows current to flow between its two contacts when pressed
	Push to Break Switch (PTB)		when the button is not pressed, current can flow, but when it is pressed the circuit is broken
	Single Pole Single Throw Switch (SPST)		a switch that controls one input circuit and makes one contact with the output circuit
	Single Pole Double Throw Switch (SPDT)		a switch that controls one circuit but they make two contacts so that they can control two devices
	Double Pole Double Throw Switch (DPDT)		Has two inputs and four outputs. Can be used to control two separate circuits, or reverse polarity in a circuit
	Limit Switch / Micro Switch		a detection switch that can operate as a push to make or push to break switch
	Reed Switch		A mechanical switch operated by an applied magnetic field
	Tilt Switch		A switch that opens or closes an electrical circuit based on the switch's position/angle
	Rotary Switch		A switch that uses a rotating mechanism to select one of several positions or settings

Output Components

Components	Name	Symbol	Description
	MES LED		A diode that glows with a Miniature Edison Screw base connection
	Tri-Colour LED		A special kind of diode that can give off three different colours of light
	Full Colour LED		A special kind of diode that can produce a full range of colours
	LED Strip		Strip of LEDs
	LED		A special kind of diode that glows when electricity passes through it
	Resistor		Limits the flow of current in a circuit
	Buzzer		An audio signaling device, which may be mechanical, electromechanical, or piezoelectric.
	Solenoid		Uses an electric current to create a magnetic field that moves a metal core
	Miniature vibrating motor		A compact device that creates vibrations for signaling.
	Cooling Fan		Uses a motor to move air to help lower temperatures
	DC motor		Converts electrical energy into mechanical energy

Activity 3 - Electronic Components: A Six-Year Reflection



Activity 4a - Learn how the Single Pole Single Throw (SPST) switch functions and controls an output

Label the Parts: Throw, Pole, Contact, Terminal



S _____ P _____ S _____ T _____

Wiring Diagram: Draw the wires to complete the circuit to switch the motor on/off



Activity: Using the SPST switch model, wire it to control an output

Circuit Diagram: Draw a simple circuit diagram with the SPST switch controlling an output

Write down what you have learned about the SPST switch

Discuss your findings with your group and share any interesting observations

Make a video demonstrating the SPST switch in operation and narrate what is happening as you operate the switch

Activity 4b - Learn how the Single Pole Double Throw (SPDT) switch functions and controls two outputs

Label the Parts: Throw, Pole, Contact, Terminal



S _____ P _____ D _____ T _____

Wiring Diagram: Draw the wires to complete the circuit to switch between the motor and the LED



Activity: Using the SPDT switch model, wire it to control two outputs

Circuit Diagram: Draw a simple circuit diagram with the SPDT switch controlling two outputs

Write down what you have learned about the SPDT switch

Discuss your findings with your group and share any interesting observations

Make a video demonstrating the SPDT switch in operation and narrate what is happening as you operate the switch

Activity 4c - Learn how the Double Pole Double Throw (DPDT) switch functions and reverses a motor

Label the Parts: Throw, Pole, Contact, Terminal



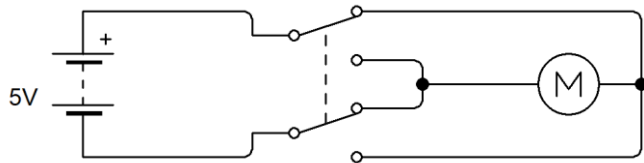
D _____ P _____ D _____ T _____

Wiring Diagram: Draw the wires to complete the circuit to reverse the motor



Activity: Using the DPDT switch model, wire it to control an output

Circuit Diagram: Label the components on the circuit diagram and explain how the circuit works























Write down what you have learned about the DPDT switch

Discuss your findings with your group and share any interesting observations

Make a video demonstrating the DPDT switch in operation and narrate what is happening as you operate the switch

Activity 5

Real world example	Observations	Input components
		 <p>Push to Make switch (PTM)</p>
		 <p>Push to Break Switch (PTB)</p>
		 <p>Single Pole Single Throw Switch (SPST)</p>
		 <p>Single Pole Double Throw Switch (SPDT)</p>
		 <p>Double Pole Double Throw Switch (DPDT)</p>
		 <p>Limit Switch / Micro Switch</p>
		 <p>Reed Switch</p>
		 <p>Tilt Switch</p>
		 <p>Rotary Switch</p>

Output components	Observations	Real world example
 <p>MES LED</p>		
 <p>Tri-Colour LED</p>		
 <p>Full Colour LED</p>		
 <p>LED Strip</p>		
 <p>Buzzer</p>		
 <p>Solenoid</p>		
 <p>Resistor</p>		
 <p>Miniature vibrating motor</p>		
 <p>LED</p>		
 <p>Cooling Fan</p>		
 <p>DC motor</p>		

Name:

Activity 6



Research:



Exploring ideas:



Task: Design and prototype an electronic subsystem suitable for an interactive sensory experience

Success Criteria:

The electronic subsystem/prototype should have:

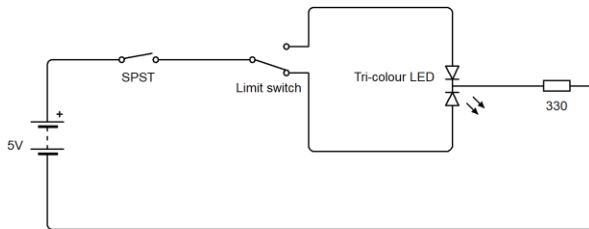
Circuit diagram and context:

Findings/Reflections:

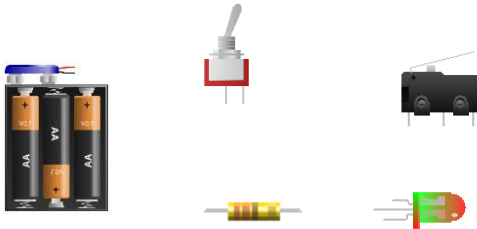
Activity 7 – Soldering self-analysis

Success Criteria:

Explain how the circuit functions?



Wiring Diagram: Draw the wires to complete the circuit as in the circuit diagram



Activity: Build and solder the working circuit

Record your soldering experience using the success criteria to guide you

Safety

Preparation

Materials used

Technique(s)

Could you modify the circuit so that it allows the tri-colour led to output all 3 colours?

What will you do differently the next time you solder?

Notes

Notes