Year 7 Jitterbug Knowledge Organiser

Key Words:
Design, Orthographic drawing, electron, electricity, circuit, electronics, solder, conductor, insulator, component, transistor, resistor, switch, Light Emitting Diode (L.E.D.) acrylic, laser cutter, CAD, CAM, assembly, evaluation, testing, voltage, polarity, protection, safety, accuracy.
Key Skills:
Drawing, designing, labelling, soldering, assembling, testing, following diagrams.

Subject: Technology
Year: 7
Term: 2
Topic: Jitter Bug

Lesson Sequence

1. Mood board of design themes inspiration.
2. Orthographic drawing of intended design.
3. Circuit theory and word definitions and demo.
4. Start circuit practical
5. Progress circuit

Key Assessments

Key assessment 2- Exam and class work mark.

Core Texts
Design and Technology KS3 class book.

The things you need to learn in this knowledge organiser are:

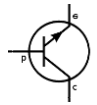
1. Describe the help a mood board can give you at the start of the design process.
2. Describe another research method and HOW it can help you design in a useful way.
3. Describe the essential features of an Orthographic drawing.
4. Be able to describe the key features and parts of an electrical circuit.
5. Describe the soldering process in at least 4 stages.
6. Define a conductor and define an insulator and give an example material of each of them.
7. Be able to draw the following circuit diagrams: 1. A simple circuit with one cell, one lamp bulb and one switch. 2. A circuit with one light bulb 'on' and one 'off' each controlled by a separate switch. 3. A circuit with 2 different components in it which are both 'on ', where each are controlled by a different switch.
8. Describe how electricity flows around a circuit and state why this happens.
9. Describe the function of a resistor, a switch and an L.E.D.
10. Define the meaning of polarity and name a component that has polarity.
11. Define the abbreviation C.A.D. and the abbreviation C.A.M.

Knowledge summary: ***Mood boards*** *can help you become inspired by images, ideas, logos, colours and writing styles. Other useful research methods include* ***surveys*** *of customer opinions,* ***research into materials*** *and tools research.* ***Orthographic drawings*** *are a 2 dimensional drawing method (2D) which shows the front, side and top of an object being designed (see visual reminder). The essential parts of a* ***circuit*** *are: the cell or 'battery', the* ***conducting circuit*** *a switch and an 'output' such as a bulb or a buzzer or L.E.D. The* ***soldering*** *process requires; correct placement of the* ***component*** *on the circuit board, heat applied with a* ***soldering iron*** *to both circuit and component,* ***solder*** *added and then heat still applied until the solder runs to create a pyramid (see visual reminder). A* ***conductor*** *is a material that* ***allows electrons*** *to flow freely along it, an* ***insulator*** *is a material that does not allow electrons to flow.* ***Switches*** *act as a bridge to the electrons and can be either open (no flow) or closed (flow). The* ***electrons*** *have a need to get from* ***positive*** *to* ***negative*** *to try to even out the* ***charge*** *in the circuit.*

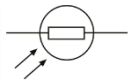
A ***resistor*** *partially slows down the flow of the electrons acting like a hurdle in a race.* ***Polarity*** *means a component must be connected in the circuit a certain way around* ***(+ and -)*** *such as an L.E.D.* ***CAD*** *and* ***CAM*** *stand for 'computer aided design' and 'computer aided manufacture'.*

You need to look, cover, draw then check these components

Transistor



LDR (light dependant resistor)

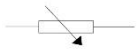


Resistor

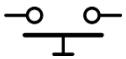
Thermistor (heat dependant resistor)

LED (light emitting diode)

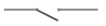
Variable resistor



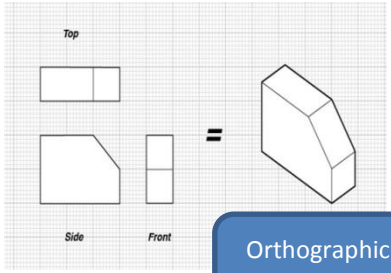
Push switch



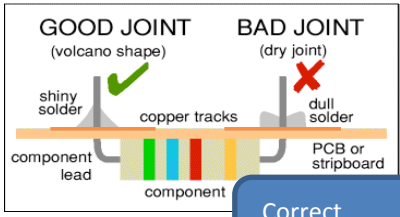
Switch (click on)



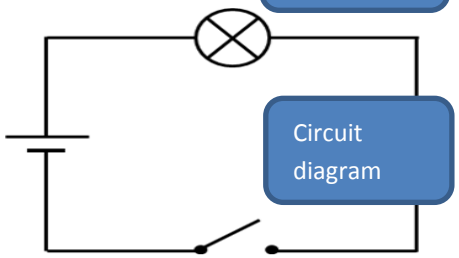
Visual Reminders



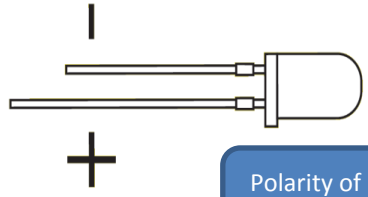
Orthographic Drawing



Correct soldering



Circuit diagram



Polarity of an L.E.D.