



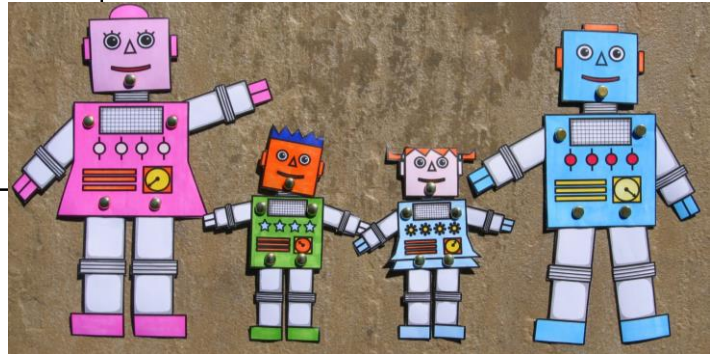
D&T
SUMMER 2
KNOWLEDGE
ORGANISERS

Year 5 - Moving Robots

Project aims: In this project you will learn how to...

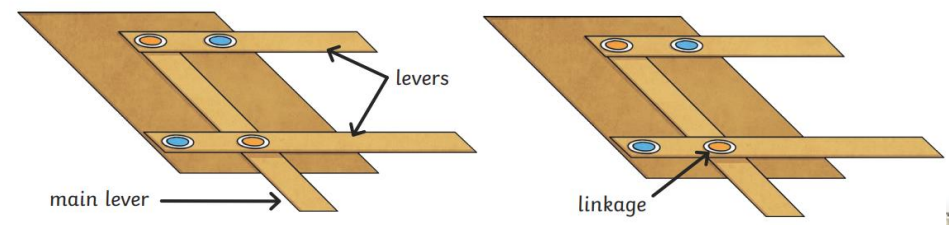
- ✓ Design for a purpose
- ✓ Analyse existing products and how to use this information to help you design
- ✓ Create a moving paper/card mechanism using levers and linkages
- ✓ Give examples of different mechanisms
- ✓ Identify a lever and linkage in a mechanism
- ✓ Identify loose and fixed pivots

Design Brief:
Design and make a moving robot using levers and linkages.

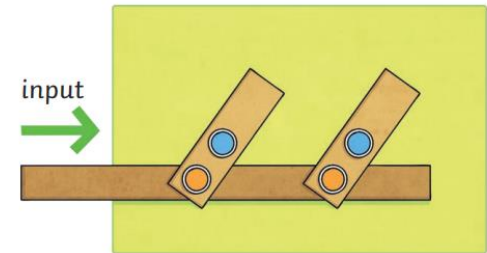


Lever Linkage

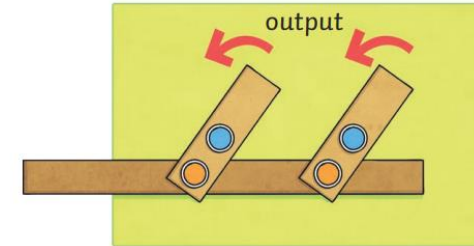
The simplest type of **mechanism**. A lever is a stiff bar which moves around a **pivot**. The part of the **mechanism** used to join one or more levers to produce the type of movement required.



Input - The movement of the main lever by the user.



Output - The movement that is made by the smaller levers.



What do lever and linkage mean?

Lever is a simple machine that helps you lift or move heavy things more easily. It works like a see-saw. A lever has three parts:

1. **The Fulcrum** - This is the point where the lever pivots or turns. It's like the middle of a seesaw.
2. **The Load** - This is the thing you want to move or lift, like a box or a heavy object.
3. **The Effort** - This is the force or push you use to move the load, like when you push down on one end of a see-saw to lift the other side.

For example, when you use a crowbar to open a box, the crowbar is a lever, and the box is the load.

Linkage is a system of connected parts that work together to move or control something. Think of it like a chain of moving parts that all work together to make something happen. Linkages can be used to change the direction or strength of movement.

For example, the parts inside a bicycle's gears and pedals are linkages. When you push the pedal, the linkages help the bike's wheels turn.

Key word	Meaning
lever	The way something looks, how beautiful or pleasing it is to the eyes.
linkage	The card strips joining one or more levers to produce the type of movement required.
Loose pivot	A split pin that fixes card strips that can move.
Fixed pivot	A split pin that fixes card strips to the backing card.
Laser cutter	A laser cutter is controlled by a computer to cut out multiple templates. (CAM) In this project the robot parts.

Year 6 - Sustainability Project



Artist/Designer Inspiration

Darrell Wakelam's cardboard turtle art sculpture is a remarkable example of sustainable art that combines creativity with environmental awareness. Made entirely from recycled cardboard, the sculpture features a lifelike turtle, symbolizing the importance of ocean conservation and the protection of marine life. Wakelam's use of cardboard not only highlights the versatility of recyclable materials but also draws attention to the impact of waste on the environment, especially in our oceans. The cardboard turtle serves as both an artistic expression and a powerful reminder of the need to reduce plastic waste and protect vulnerable species from pollution and habitat destruction.

In this project you will learn how to...



- Design for a purpose
- Analyse existing products and how to use this information to help you design
- Design and make a 3D turtle
- Use research to create a poster raising awareness of the importance of recycling
- Assemble your final product to a good standard

What is the importance of recycling for our oceans.

Recycling is crucial for protecting our oceans from pollution. By recycling materials like plastic, we reduce waste that could end up in the sea, harming marine life. Plastics can take hundreds of years to break down, causing damage to ecosystems. Recycling helps conserve resources, reduces landfill waste, and keeps our oceans cleaner and safer for wildlife.

Paint texture techniques

Use your paint in many different directions to get the effect of ripples in the water.

TOP TIP - try to avoid using too much water and don't wash your brush in between colours!



What does Font mean?

A font refers to a specific style and size of text used in writing or printing. It defines how letters, numbers, and symbols look when displayed on a screen or printed on paper. For example, Arial, Times New Roman, and Comic Sans are different fonts. Fonts can vary in thickness, slant, spacing, and other design elements, giving text a unique appearance.



Key word	Meaning
Aesthetics	The way something looks, how beautiful or pleasing it is to the eyes.
Target audience	Who the product is aimed at.
Functionality	How well something works or how useful it is for a specific purpose.
Quality	The standard or level of how good something is.
Specification	A detailed description of the features or requirements of something.

Year 7 - Electronics Cultural Influences

In this project you will learn how to...

- ✓ Design for a purpose.
- ✓ Analyse existing products and how to use this information to help you design.
- ✓ Design and make a light using recycled materials.
- ✓ Improve your knowledge of a range of electronic components and their role within a circuit.
- ✓ Assemble your final product to a good standard.

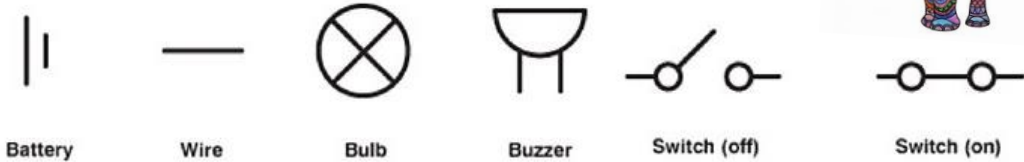


Product analysis - CAFÉ QUE

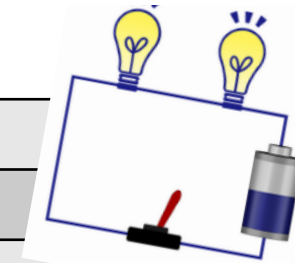
C = Cost	how much would the product cost to make and to buy? Is it good value for money?
A = Aesthetics	Is it attractive to look at? what makes it so?
F = Function	Function: what does the product do? How does it work? Is it effective?
E = Ergonomics	how easy or comfortable is it to use/hold?
Q = Quality	how well manufactured is it? What materials have been used to make it?
U = User	who will buy or use the product? Has it been designed appropriately for the targeted user?
E = Environment	what impact does the product have on the environment? Is it recyclable? Will the materials used harm the environment? How long will it be used before it is thrown out?



Simple circuit symbols



Key word	Meaning
Aesthetics	The way something looks, how beautiful or pleasing it is to the eyes.
Decoration	Items or changes made to enhance the appearance of a place or object.
Functionality	How well something works or how useful it is for a specific purpose.
Quality	The standard or level of how good something is.
Specification	A detailed description of the features or requirements of something.



HOLI Festival

The **Holi Festival**, also known as the **Festival of Colours**, is a popular Hindu celebration that marks the arrival of spring. It is celebrated in India and other parts of the world, usually in March. Holi is a joyful occasion where people throw colourful powders at each other, dance, sing, and enjoy delicious foods. The festival is a way to celebrate love, the triumph of good over evil, and the end of winter. It's a time to forgive past wrongs and come together with friends and family to have fun. People wear old clothes because the coloured powders can stain, and it's all about having fun and spreading happiness!



Year 8 Textiles – Street Art

Project aims: In this project you will learn how to...

- ✓ Design for a purpose.
- ✓ Analyse existing products and how to use this information to help you design.
- ✓ Design and make a bag inspired by a selection of street artists
- ✓ Understand how and why graffiti is used in design.

Product analysis – CAFÉ QUE

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Grffiti is successful in design because it's bold, vibrant, and instantly grabs attention. Its use of strong colours, unique lettering, and urban aesthetics creates an emotional connection with viewers. Graffiti often reflects social issues and personal expression, making it relatable and engaging, especially in modern, urban design contexts.



Key word	Meaning
Aesthetics	The way something looks, how beautiful or pleasing it is to the eyes.
Quality assurance	The process of making sure that a product or service meets certain standards and is free from problems. It involves checking and testing the product to make sure it works well and is safe for users.
Functionality	How well something works or how useful it is for a specific purpose.
Quality	The standard or level of how good something is.
Target audience	Who the product is aimed at.

Street Art

Here are some well-known **street artists**:

1. **Banksy** – Famous for his provocative, politically charged artworks and stencilled graffiti.
2. **Jean-Michel Basquiat** – Known for his vibrant, raw, and expressive street art that combines words and imagery.
3. **Shepard Fairey** – Creator of the iconic "Obey Giant" campaign and "Hope" poster for Barack Obama.
4. **Keith Haring** – Famous for his bold, colourful, and cartoonish artwork often addressing social issues