

DT

MILESTONE THREE

Cycle A

Autumn

Spring

Summer

Design, make, evaluate and improve:

- Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).
- Make products through stages of prototypes, making continual refinements.
- Ensure products have a high quality finish, using art skills where appropriate.
- Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.

**Master practical skills:
Mechanics**

- Convert rotary motion to linear using cams.
- Use innovative combinations of electronics (or computing) and mechanics in product designs.

**Master practical skills:
Materials**

(also across other DT areas and linked with art)

- Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).
- Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper).

**Master practical skills:
Textiles**

- Create objects (such as a cushion) that employ a seam allowance.
- Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).
- Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion).

Media:

Boxes
Cams
Dowel

Media:

Range of available materials including card, string, fabric, wood, paper, card
Range of glues, including glue gun (supervised)
Range of cutting tools – different scissors, snips, saws, wire cutters, paper trimmer, safety rule, stanley knife (supervised)

Media:

Felt, hessian, muslin, calico
Dyes or fabric paint
Wax (resist)
Beads and buttons

Pop up toy

Across other art/DT activities or free choice project (e.g. make a printing block from a range of materials)

Decorated cushion

**Take inspiration from design throughout history:
Frank Hornby**

Hornby Railways is a British model railways manufacturing company. Its roots date back to 1901 in Liverpool, when founder Frank Hornby received a patent for his Meccano construction toy. The first clockwork train was produced in 1920.

**Take inspiration from design throughout history:
Vivienne Westwood**

In the 1960's, alongside her husband Malcolm McLaren, she designed clothes with a rock 'n' roll influence which was very shocking to people at the time.

Jasper Conran

In 1985, he developed his menswear collection. He has since expanded to design furnishings, fabrics, wallpapers and tableware. He was appointed an OBE for his services to fashion and design in 2008.

**Take inspiration from design throughout history:
Terence Conran**

The brains behind Habitat, Terence Conran opened two manufacturing companies during the 1950s, 'Conran furniture' and 'Conran fabrics'. Aiming to bring attractive, affordable designs to the masses, in 1964 he opened his first Habitat in Brompton Cross. By the end of the decade, Habitat had nine branches in the UK and a reputation for inexpensive, appealing design.

Take inspiration from design throughout history:

- Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.
- Create innovative designs that improve upon existing products.
- Evaluate the design of products so as to suggest improvements to the user experience.

DT

MILESTONE THREE

Cycle B

Autumn

Spring

Summer

Design, make, evaluate and improve:

- Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).
- Make products through stages of prototypes, making continual refinements.
- Ensure products have a high quality finish, using art skills where appropriate.
- Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.

**Master practical skills:
Food**

- Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).
- Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.
- Demonstrate a range of baking and cooking techniques.
- Create and refine recipes, including ingredients, methods, cooking times and temperatures.

**Master practical skills:
Construction**
(link with electricals)

- Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).

**Master practical skills:
Electricals and electronics**
(link with construction)

- Create circuits using electronics that employ a number of components.

Media:

Range of ingredients and utensils

Media:

Wood, dowel, wheels, card
Lego and other construction kits

Media:

Batteries, switches, wires, lights, buzzers, motors, pulleys, belts

Savoury dishes linked with another curricular area (e.g. plant based/vegetarian/vegan, traditional dishes from South America)
Adapted breads or cookies to suit personal tastes and ideas

Build a vehicle chassis
STEM – Beat the Flood challenge

Build a battery operated vehicle controlled by a switch/switches

Take inspiration from design throughout history:

Traditional recipes
Local ingredients

Take inspiration from design throughout history:

Homes around the world
Vehicles

Take inspiration from design throughout history:

Motorised vehicles through time

Razan Alsous

Before Razan Alsous escaped to Britain from the chaos of Damascus, she had never worked in food. Five years on, her deep love for halloumi has made Yorkshire Dama Cheese one of the region's hottest new food items.

Jamie Oliver

is an English chef, restaurateur and cookbook author who has fronted numerous TV shows and opened restaurants. In 2005, he opened a campaign, [Feed Me Better](#), to introduce schoolchildren to healthier foods, which was later backed by the government.

Isambard Kingdom Brunel

Isambard Kingdom Brunel was a Victorian engineer who was one of the main architects of Britain's industrial revolution. He was famous for his pioneering work on Britain's railways and ships. He built railways and designed bridges, tunnels, viaducts and passenger ships.

Alec Issigonis

Sir Alexander Arnold Constantine Issigonis was a British-Greek automotive designer. He designed the Mini, launched by the British Motor Corporation in 1959

Clive Sinclair

The Sinclair C5 is a small one-person [battery electric recumbent tricycle](#), technically an "electrically assisted pedal cycle".^[1] It was the culmination of Sir [Clive Sinclair](#)'s long-running interest in electric vehicles.

Take inspiration from design throughout history:

- Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.
- Create innovative designs that improve upon existing products.
- Evaluate the design of products so as to suggest improvements to the user experience.

DT
MILESTONE TWO

Cycle A

Autumn

Spring

Summer

Design, make, evaluate and improve:

- Design with purpose by identifying opportunities to design.
- Make products by working efficiently (such as by carefully selecting materials).
- Refine work and techniques as work progresses, continually evaluating the product design.
- Use software to design and represent product designs.

**Master practical skills:
Mechanics**

- Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears).

**Master practical skills:
Materials**

(also across other DT areas and linked with art)

- Cut materials accurately and safely by selecting appropriate tools.
- Measure and mark out to the nearest millimetre.
- Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).
- Select appropriate joining techniques.

**Master practical skills:
Textiles**

- Understand the need for a seam allowance.
- Join textiles with appropriate stitching.
- Select the most appropriate techniques to decorate textiles.

Media:

Cardboard levers, split pins, cardboard hinges, cardboard pop-ups

Media:

Range of available materials including card, string, fabric, wood, paper, card
Range of glues
Range of cutting tools – different scissors, snips, saws, wire cutters, paper trimmer

Media:

Felt, cotton thread

Mechanical models using different lever and linkage designs

Across other art/DT activities or free choice project (e.g. make a printing block from a range of materials)
Cardboard box puzzle maze
<https://www.hellowonderful.co/post/kid-made-diy-recycled-cardboard-marble-maze/>

Money containers

Take inspiration from design throughout history:

The shaduf: This device is said to have been used in Egypt and India for **raising water and lifting soldiers over battlements** as early as 1500 BC

Take inspiration from design throughout history:

Adrian Fisher MBE is a British pioneer, inventor, designer and creator of mazes, puzzles, public art, tessellations, tilings, patterns and networks of many kinds. He is responsible for more than 700 mazes in 42 countries since 1979

Take inspiration from design throughout history:

Dana Cohen's first award-winning collection, Worn Again, was developed in 2015 using recycled materials. By taking discarded fabrics and shredding them into smaller monochromatic fibers, Cohen was able to create new felted textiles out of scraps that would usually be taken to the landfill.

Take inspiration from design throughout history:

- Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.
- Improve upon existing designs, giving reasons for choices.
- Disassemble products to understand how they work.

DT

MILESTONE TWO

Cycle B

Autumn

Spring

Summer

Design, make, evaluate and improve:

- Design with purpose by identifying opportunities to design.
- Make products by working efficiently (such as by carefully selecting materials).
- Refine work and techniques as work progresses, continually evaluating the product design.
- Use software to design and represent product designs.

**Master practical skills:
Construction**

- Choose suitable techniques to construct products or to repair items.
- Strengthen materials using suitable techniques.

**Master practical skills:
Food**

- Prepare ingredients hygienically using appropriate utensils.
- Measure ingredients to the nearest gram accurately.
- Follow a recipe.
- Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).

**Master practical skills:
Electricals and electronics**

- Create series and parallel circuits

Media:

Dowel, plastic, papers, strings, polythene, tissue, glues and tapes

Media:

Range of ingredients and utensils

Media:

Plastic containers and boxes, tissue, cellophane
Batteries, light bulbs, wires, switches

Kites

<https://www.twinkl.co.uk/resource/tp2-d-053-planit-dt-lks2-lets-go-fly-a-kite-unit-pack>

Savoury dishes from a European country e.g. Spain
Vegetable based soups or stews

Battery operated lights

**Take inspiration from design throughout history:
Kites through history**

People flew the first kites about 3,000 years ago, probably in China. These kites were strips of bamboo covered with silk. Later, scientists used kites to study weather. In the American colonies in 1752 Benjamin Franklin flew a kite with a key attached in a thunderstorm.

**Take inspiration from design throughout history:
Mary Berry**

Mary Berry is also known as Mary, Queen of Cakes. She is a famous British television presenter, chef, and food writer. She has published over 75 cookbooks under her name. The most popular one is Baking Bible, which was published in 2009.

**Take inspiration from design throughout history:
Contemporary light designs from companies such as
IKEA, Amazon, Habitat**

Fun inspiration: Luxo Jr. is a semi-anthropomorphic toy desk lamp character used as the primary mascot of Pixar Animation Studios. Launched in 1935, the original anglepoise desk lamp is highly adaptable and offers ergonomic functionality

Take inspiration from design throughout history:

- Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.
- Improve upon existing designs, giving reasons for choices.
- Disassemble products to understand how they work.

DT		
MILESTONE ONE		
Cycle A		
Autumn	Spring	Summer
Design, make, evaluate and improve: <ul style="list-style-type: none"> • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design. 		
Master practical skills: Mechanics	Master practical skills: Materials (also across other DT areas and linked with art)	Master practical skills: Textiles
<ul style="list-style-type: none"> • Create products using levers, wheels and winding mechanisms. 	<ul style="list-style-type: none"> • Cut materials safely using tools provided. • Measure and mark out to the nearest centimetre. • Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). • Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). 	<ul style="list-style-type: none"> • Shape textiles using templates. • Join textiles using running stitch. • Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).
Media: Card	Media: Card, fabric, string, dowel, wood, light box	Media: Range of fabrics, thread, wool
Moving pictures (linked with Traditional Tales) Conveyor belt https://www.hellowonderful.co/post/diy-cardboard-car-conveyor-belt/	Simple puppets – hand, stick, finger, dual string, shadow	Fabric faces Bunting Printing on fabric (link with art)
Take inspiration from design throughout history: Victorian toys which use sliders and levers	Take inspiration from design throughout history: Indian shadow puppets Shadow puppet theatre likely originated in Central Asia-China or in India in the 1st millennium BCE. Punch & Judy	Take inspiration from design throughout history: Naval flags Bunting originated from the Navy back in the 17th century. This is because the person's job to put the flags up on the ship was called a 'bunt'. The word bunting also derived from France, there the term means lightweight wool fabric which would be used to make the bunting.
Take inspiration from design throughout history: <ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 		
DT		
MILESTONE ONE		

Cycle B

Autumn	Spring	Summer
<p>Design, make, evaluate and improve:</p> <ul style="list-style-type: none"> • Design products that have a clear purpose and an intended user. • Make products, refining the design as work progresses. • Use software to design. 		
<p>Master practical skills: Food</p>	<p>Master practical skills: Construction</p>	<p>Master practical skills: Electricals and electronics</p>
<ul style="list-style-type: none"> • Cut, peel or grate ingredients safely and hygienically. • Measure or weigh using measuring cups or electronic scales. • Assemble or cook ingredients. 	<ul style="list-style-type: none"> • Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products. 	<ul style="list-style-type: none"> • Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).
<p>Media: Appropriate ingredients and utensils</p>	<p>Media: Balsa wood, wood offcuts, card, plastic cartons and lids</p>	<p>Media: Batteries, wires, bulbs</p>
<p>Design and prepare salads and sandwiches Create dips and dippers Packed lunch or party food design</p>	<p>Boats – making sure it floats, make sure it’s stable</p>	<p>Lighthouse – make the light go on and off</p>
<p>Take inspiration from design throughout history: John Montagu In 1762, John Montagu, the 4th Earl of Sandwich, invented the meal that changed dining forever. As the story goes, he was playing cards and did not want to leave the gaming table to eat. He asked for a serving of roast beef to be placed between two slices of bread so he could eat with his hands.</p>	<p>Take inspiration from design throughout history: The Titanic The RMS <i>Titanic</i> was a British passenger ship. It was built by Harland and Wolff ship builders, in Belfast. She sank during her first trip at sea. Before she sailed, many people thought it would be almost impossible for ships of this design to sink.</p>	<p>Take inspiration from design throughout history: John Smeaton In 1759 an English engineer named John Smeaton designed a new type of lighthouse. It became a model for most lighthouses that followed. The lighthouse was built from interlocking blocks of stone instead of wood. This strengthened the structure so it could withstand powerful waves.</p>
<p>Take inspiration from design throughout history:</p> <ul style="list-style-type: none"> • Explore objects and designs to identify likes and dislikes of the designs. • Suggest improvements to existing designs. • Explore how products have been created. 		