DT Process

Investigate and Evaluate

Design

Make

Evaluate

Progression in the Curriculum:
DESIGN & TECHNOLOGY

DT Strand: **Cooking & Nutrition**

DT Strand: **Electrical Systems**

DT Strand: **Mechanisms**

DT Strand: **Structures**

DT Strand: **Textiles**

Yr6: Celebrating food choices and adapting recipes: Spaghetti Bolognese

Chn will carry out research into understanding where food come from, specifically considering how beef is reared and the ethical issues around it.

Chn will consider the range of factors that influence food choices and consider these for their user in creating and adapting a recipe. They will create a design specification considering what they need to include to be successful in their outcome.

Chn will know how to use utensils and equipment including heat sources to prepare and cook food. Chn will be able to store and handle equipment correctly. Chn will be able to follow a recipe, utilising a range of skills required to prepare and cook their version of a spaghetti Bolognese.

Chn will evaluate their design decisions for their meal as well as considering the views of others when identifying improvements.

Yr6: Monitoring and Control: A self-driving vehicle

Children will investigate vehicles and identify the various components used and how they have changed overtime.

Chn will use research and their own experiences to create a design specification, where they understand how the purpose differs depending on the user. They will make clear design decisions for an innovative, functional product that has a clear purpose and an intended user.

Chn will apply their understanding of computing to program, monitor and control multiple components for their products. They will make a working circuit that incorporates a battery, motor, lights and a sensor.

Chn will select from a wide range of materials to create an authentic product for their intended user, refining and developing throughout the making stage.

Chn will continually evaluate their product as they develop it, including diagnosing and debugging faults in their software and circuit.

Chn will evaluate their design decisions, purpose, user, functionality, authenticity and innovation of their product.

Yr 6: Pulleys or Gears: A self-driving vehicle

Children will investigate vehicles and identify the various components used. They will explore the uses of gears and pulleys and consider how gears and pulleys can be used to speed up, slow down or change direction of movement using construction kits.

Chn will use research and their own experiences to create a design specification where they understand how the purpose differs depending on the user. They will make clear design decisions for an innovative, functional product that has a clear purpose and an intended user.

Children will use tools (including woodwork tools) and equipment accurately to create a working mechanical system.

Chn will evaluate their design decisions, purpose, user, functionality, authenticity and innovation of their product and consider how to develop and innovate against their user and design criteria throughout the creating process.

Yr5: Combining different fabric shapes: A pencil case

Children will use research to explore the aesthetic styles and functions of pencil cases. They will consider the design decisions of these products.

Children will use research and their own experiences to make design decisions and create a design specification where they understand how the purpose differs depending on the user.

Chn will generate, develop and model their ideas through discussion, annotated sketches and cross-sectional diagrams

Chn will create 3D products from a combination of accurately made fabric shapes and with different fabrics. Children will reinforce their sewing skills to improve the appearance and consistency of a range of stitches. They will also practise the blanket stitch

Chn will evaluate their design decisions, purpose, user, functionality, authenticity and innovation of their product.

Yr5: Frame structures: A Christmas market stall

Children will use research to explore frame structures and the purpose, invocation and design decisions of market stalls and their own experiences to create design criteria where they understand how the purpose differs depending on the user.

Children will use research and their own experiences to make design decisions and create a design specification where they understand how the purpose differs depending on the user.

Chn will generate, develop and model their ideas through discussion, annotated sketches and prototypes where they will consider the importance of structure and strengthening techniques such as triangulation.

Chn will select from and use a wider range of materials and tools including hacksaws.

Chn will cut materials with precison and refine the finish with appropriate tools, including sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape.

Chn will evaluate their design decisions, purpose, user, functionality, authenticity and innovation of their product.

Yr5: Celebrating culture and adapting recipes: pizza

Chn will revise the importance of a varied diet, considering how world diets are similar as everyone needs the same food groups to be healthy. They will look beyond the eatwell plate, considering the nutritional values of food labels.

Chn will make clear design decisions for adapting a recipe, creating a design specification to help inform the requirements of their recipe against the design brief.

Chn will know how to use utensils and equipment including heat sources to prepare and cook food. Chn will be able to follow a recipe, adapting it to meet the needs of their user where they consider presentation as well as ingredients. They will practise their kneading ,rubbing in, sieving and measuring skills as well as previous skills

Chn will evaluate their design decisions for their meal as well as considering the views of others when identifying improvements.

Year 4: Simple programming and control: Nightlight

Chn will investigate and evaluate the design criteria for different types of lights.

Chn investigate and construct simple series electrical circuits using bulbs, batteries and switches that are connecting to a programmable board. They will also consider ways to diagnose and debug faults in their circuits.

Their design must be an innovative, functional product that is purposeful and has a clear user that they have created. They will generate realistic ideas through discussion and annotated sketches, focusing on the needs of the user.

Chn will have the experience of writing and modifying a program to make a light turn on or flash on or off.

Chn will select from a wide range of materials to create an innovative and purposeful product for their intended user.

Chn will evaluate the purpose, functionality and innovation of their product against their user and design criteria.

Year 4: Levers and Linkages: Moving recycling poster

Chn will evaluate a range of existing levers and linkages products considering the use of fixed and loose pivots.

Chn will design an innovative, functional product that is purposeful and has a clear user. They will generate realistic ideas through discussion and annotated sketches, focusing on the needs of the user

Chn will select from and use appropriate tools with some accuracy to cut, shape and join paper and card.

Chn will create prototypes to develop their ideas for their final idea

Chn will evaluate the purpose and functionality of their prototype and consider how to develop and innovate against their user and design criteria.

Chn will evaluate their final product against the design criteria

Year 4: Seasonality and a healthy diet: Fruit tart

Chn will investigate the impact of climate on growing food and how we have to import some foods which can involve processing them to make them last longer

Chn will carry out sensory evaluations of a variety of seasonal ingredients understanding that seasonality impacts on taste and the environment.

Chn will generate ideas through annotated sketches after deciding on the most important design criteria for their tarts.

Chn will prepare and combine ingredients hygienically using appropriate utensils where they develop their skills of chopping and slicing as well as using a heat source.

Chn will evaluate their food product against their design criteria.

Year 3: 3D products: Cushions

Chn will evaluate a range of existing cushions, considering aesthetics, fastenings and purpose.

Chn will create design criteria to help them design an innovative, functional product that is purposeful and has a clear user. Chn will generate ideas through discussion, annotated sketches and pattern pieces

Chn will select and use a range of appropriate tools with some accuracy for cutting, joining and finishing

Chn will strengthen, stiffen and reinforce existing techniques as well as using cross stitch and back stitch and appliqué to securely join two pieces of fabric together.

Chn will evaluate the purpose, user, functionality and innovation of their product against their design brief.

Year 3: Free-standing structures: Fruit packaging

To evaluate a range of existing products, exploring packaging, nets and how these products are strengthened.

Chn will create design criteria to help them design an innovative, functional product that is purposeful and has a clear user by generating ideas through discussion and annotated sketches

Chn will select and use a range of appropriate tools safely with some accuracy for cutting, joining and finishing

Chn will apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs). They will create a prototype to develop their ideas for their final product.

Chn will evaluate the purpose, user, functionality and innovation of their product against the design brief.

Year 3: Healthy and varied diets: Sandwich wraps

Chn will understand the importance of a healthy diet, considering where food comes from in further detail and knowing what food belongs in different food groups.

Chn will carry out sensory evaluations of a variety of ingredients and combinations.

Chn will generate ideas through annotated sketches after deciding on the more important design criteria for their sandwiches.

Chn will prepare and combine ingredients hygienically using appropriate utensils where they reinforce skills of peeling, grating and chopping as well as practicing slicing using the bridge technique.

Chn will evaluate their food product against their design criteria.

Year 2: Templates and Joining: Xmas card sleeve

Chn will explore and use a range of gift bags and sacks and discuss their purpose.

Chn will use discussion and drawings to generate and develop ideas of a design that must be functional, appealing and fit -to purpose in line with design criteria

Chn to select from and use a range of equipment and materials to join fabrics using running stitch, glue, over-stitch and/or stapling.

Chn use different finishing techniques such as using paint, fabric crayons, stitching, sequins, buttons and ribbons.

Chn will evaluate their dislikes and likes about their product in regards to functionality and whether its fit to purpose in regards to the success criteria

Year 2: Wheels and axles: A toy vehicle

Chn will explore and evaluate a range of wheeled products. They will consider the user and purpose of vehicles. Chn will investigate the shapes of wheels and how it impacts movement.

Chn will use discussion and drawings to generate ideas that are in line with the design criteria

Chn will create a vehicle with wheels and axles considering their design and selecting a range of tools to allow movement and materials such as paper, card, plastic and wood.

Chn will evaluate their dislikes and likes about their product in regards to functionality and whether its fit to purpose in regards to the design criteria.

Year 2: Preparing fruit and vegetables Smoothies

Chn will explore a range of fruit and vegetables and recognise their differences and how they grow.

Chn will develop their vocabulary according to their colour, texture and taste of a range of fruity drinks, understanding the impact of sugar.

Chn to understand what healthy eating is and that fruits and vegetables are an important part

Chn will use discussion of experiences and drawings to generate and develop ideas.

Chn will cut, peel or grate ingredients safely and hygienically using simple utensils and equipment. They will also practise chopping using the claw technique

Chn will evaluate their dislikes and likes about their product in regards to simple design criteria.

Year 1: Free-standing structures: Playground equipment

Chn will explore a range of playground equipment using photos and construction kit to help them to develop their ideas.

To use discussion and drawings to generate ideas

The design must use their own experiences to be functional and fit-to purpose in line with design criteria

Chn will select tools and materials chosen by their teacher to cut, shape and join paper and card.

Chn to make structures stronger using resources such as tape, glue and staples.

Chn will evaluate their dislikes and likes about their product in regards to its functionality, purpose and appeal.

Year 1: Sliders and Levers: Mr Men/Little Miss moving picture

Chn will explore a range of pop up books that use simple sliders and levers and to understand that different mechanisms produce different types of movement.

To use discussion and drawings to generate ideas from an imaginary, story-based context.

Chn will design a functional, and fit-to purpose product in line with design criteria.

Chn to develop their skills by replicating the slider and lever teaching aids. Chn will select tools and materials chosen by their teacher.

Chn will evaluate their dislikes and likes about their product in regards to its functionality, purpose and appeal.

Yr1: Preparing fruit and vegetables: Fruit Kebab

Chn will explore a range of fruit according to their colour, texture and taste. Theye will understand that fruit are grown.

Chn will use discussion of experiences and drawings to generate ideas

Chn will cut or peel ingredients safely and hygienically using simple utensils and equipment.

Chn will evaluate their dislikes and likes about their product in regards to the design criteria.

Year Group	Key Vocabulary

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General terms:

Function	Purpose	Innovation
Design specification	Design decisions	Annotated sketch
Authenticity	Evaluate	Properties
Prototype Design brief	User	Research Investigate
Materials	Tools	Diagram

Celebrating food choices and adapting recipes

Flavour	Balanced diet	Healthy
Hygienic	Appearance	Substitute
Recipe	Spice, herbs	Ingredients
Quantity Simmer	Slice, Grate, Peel, chop	Reared, Cattle
Weighing scales	Mix, pour, stir, combine	Nutritional values

Mechanical Systems

Drive belt	Pulley	Spindle
Exploded diagram	Gear, Axle	Annotated sketches
Rotation	Driver	Follower
Hacksaws	Process	Input, Output
Bench hook	G-clamp	Chassis

Electrical systems

Fault, Crocodile clips	Parallel circuit Battery holder	Switch name Program System
Debug	Connection	Input/output
Motor	USB cable	Wire stripper

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General terms:

Function	Purpose	Innovation
Design specification	Design decisions	Annotated sketch
Authenticity	Evaluate	Properties
Prototype Design brief	User	Research Investigate
Materials	Tools	Diagram

Celebrating culture and adapting recipes

Traffic lights	Balanced diet	Nutritional values
Hygienic	Appearance	Substitute
Recipe	Flavour	Ingredients
Fibre Salt	Slice, Grate, chop, Stir	Healthy Adapt
Weighing scales	Mix, knead, stir, combine	Spice herbs

Frame structures

Join	Frame structure	Temporary
Shape	Triangulation	Permanent
Stiffen	Stability	Reinforce
Wood glue	Square-sectioned wood	Hacksaws G-clamp
Bench hooks	Masking tape Compression	Joints Tension

Textiles:

Seam	Seam allowance	wadding
Hem	Right/wrong side	Fastenings
Pins	Pattern pieces	Needles
Thread	Pinking shears	Fastenings
Stitch types	Iron transfer paper	Mock-up Template
Zip	Embroidery	Appliqué

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General terms:

Function	Purpose	Innovation
Design criteria	Annotated sketch	Appeal User
Investigates	Evaluate	Properties
Materials	Tools	Diagram

Seasonality and a healthy diet: Tarts

Healthy	Food groups	Seasonality
Hygienic	Appearance	Preference
Recipe	Flavour	Ingredients
Taste, Texture	Slice, Cut, Grate, Peel	Balanced diet
Seasonally	Importing	Climate

Mechanical Systems

Linkage	Lever	Mechanism
Input/output System	Bridge Guide	Fixed/loose pivots
Oscillating	Rotary	Reciprocating
Prototype	Layers,	Adhesive
Assemble	Spacers	Name of tape

Electrical systems

Fault	Series circuit	Switch name
Crocodile clip	Micro-controller	Program, System
Debug	Connection	Input/output
Control	Device	Crumble

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General Terms

Function	Purpose	Innovation
Design criteria	Annotated sketch	Appeal User
Investigate	Evaluate	Properties
Materials	Tools	Diagram

Healthy and varied diets: Sandwich wraps

Healthy	Food groups	Processed
Hygienic	Appearance	Preference
Recipe	Flavour	Ingredients
Texture, Five tastes	Chopping board	Balanced diet
Harvested	Slice, Cut	Frozen
Fresh	Grate, Peel	Tinned

Textiles

Needle	Pattern pieces	Aesthetics
Seam	Stitch types	Fastening
Thread	Template	Appliqué
Fabric	Cross stitch	Seam, face
Finish	Strength	Back stitch

Shell structures

Shell, Tabs	Window	Edge, Vertex
3D, Net	Cuboid	Stiff, Stable
Prism	Cube	Strengthen
Marking out	Prototype	Transparent
Adhesives	Scoring	Packaging

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General terms:

Functional	Purposeful	Designing
Design brief	User	Appealing
Design criteria	Investigate	Evaluating

Preparing Fruit and Vegetables:

Sugar	Name of fruit/veg	Utensils
Taste,	Healthy eating	Smoothie
Safety	Peel, Chop, Grate	Texture,
Blend	Under, above ground	Ingredients Popular

Textiles

Fabrics	Decorate	Sequins
Puppet faces	Needle	Finish
Running stitch	Sew	Thread
Pattern pieces	Mark out	Template

Mechanisms

Vehicle	Wheel	Axle, Body
Assembling	Joining	Movement
Axle holder	Turning	Fixed, Free

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General terms:

Functional	Purposeful	Appealing
Design brief	Tools Materials	Evaluate Design

Preparing fruit: Fruit kebab

Name of fruit	Skin, Hard	Texture
Cut, Peel, Grate	Soft, Juicy	Crunchy
Choosing	Utensils	Taste

Mechanical Systems

Cut	Lever, Slider	Movement
Slot	Paper fastener	Pull/Push
Bridge	Shape	Forwards
Guide	Masking tape	Backwards

Freestanding Structures

Structure	Join, Cut, Fold	Shape
Straight	Tape names	Corner
Equipment	Freestanding	Stiff
Prepositions	Weak/Strong	Curved
Thinner	Thicker	Edge

Year Group	Wider Opportunities and Experiences Potential experiences
6	Enterprise Maths week Science day: marshmallow tallest structures with parents World Earth day Show and tell Yr 6 cooking club Crafts club Harry potter world design workshop Science museum Young coders competition
5	Enterprise Maths week Science day: marshmallow tallest structures with parents Taster day at Royal Liberty World Earth day Show and tell Crafts club Pizza Express/Frankie and Benny workshop I'm an engineer, get me out of here! (Chn ask questions and vote on real life engineers)
4	Enterprise Maths week Science day: marshmallow tallest structures with parents World Earth day Show and tell Cooking workshop– Royal academy of Culinary Arts with a chef Science– creating a sound studio Mayan Temple structures Practical action plastics competition
3	Enterprise Maths week Science day: marshmallow tallest structures with parents World Earth day Show and tell Trip to supermarket– farm to fork workshop
2	Enterprise Maths week Science day: marshmallow tallest structures with parents World Earth day Show and tell Pancake day Farmvention competition
1	Enterprise Maths week Science day: marshmallow tallest structures with parents World Earth day Show and tell Trip to farm

Early learning Goals: EYFS

Exploring and using media

- Constructs with a purpose in mind, using a variety of resources.
- Use simple tools and techniques competently and appropriately.
- Select tools and techniques needed to shape, assemble and join materials they are using.

Technology

- Shows an interest in technological toys with knobs or pulleys, or real objects.
- Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images
- Completes a simple program on a computer

World

- Talk about why things happen and how things work.

National Curriculum: summary KS1

- Creative/practical activities and an iterative process of designing and making in a range of relevant contexts
- Clear design criteria – designing, purposeful, functional, appealing products for themselves/other users
- Opportunities to use different tools/materials
- Explore and evaluate a range of existing products
- Evaluate their ideas and products against the design criteria.
- Strengthening structures, mechanisms
- Use basic principles of a healthy and varied diet to prepare dishes
- Understand where food comes from

National Curriculum summary: KS2

- Creative/practical activities and an iterative process of designing and making in a range of relevant context
- Use research and develop design criteria- innovative, functional, appealing products that are fit for purpose aimed at particular individuals/groups.
- Opportunities to select a wider range of tools/materials and using them accurately.
- Considering the functional and aesthetic qualities of materials.
- Investigate and analyse a range of existing products
- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their prototype.
- Understand how key events and individuals in design and technology have helped shape the world
- Strengthening more complex structures, mechanical systems, electrical systems, coding using computers,
- Understand and apply the principles of a healthy and varied diet
- Prepare and cook a variety of predominantly savoury dishes, using a range of cooking techniques
- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.