

Year 1 DT Autumn Term – Preparing Fruit and Vegetables

Design Brief/National Curriculum Objectives (KS1)

To plan and prepare a fruit or vegetable salad to share at home.

Design:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria;
- Generate, develop, model and communicate their ideas through talking, drawing [...].

Make:

- Select from and use a range of tools and equipment to perform practical tasks;
- Select from and use a wide range of materials and components, including [...] ingredients, according to their characteristics.

Evaluate:

- Explore and evaluate a range of existing products;
- Evaluate their ideas and products against design criteria.

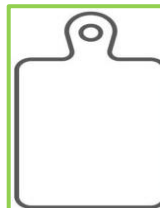
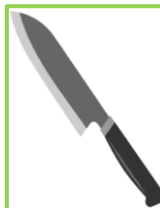
Cooking and Nutrition:

- Use the basic principles of a healthy and varied diet to prepare dishes;
- Understand where food comes from.

Key Skills

- To create a simple, annotated drawing of a product before production;
- To describe and explain the ingredients being used and the reasons for their choice, both verbally and in writing;
- To understand the need for a balanced diet;
- To use a range of cutting and slicing skills safely;
- To use and understand basic food handling and hygienic practices.

Tools/Equipment/Ingredients



Diagrams/Images/Symbols



Cutting



Slicing



Peeling



Grating



Squeezing

Hygiene – some key pointers

- Jewellery is removed
- Hair is tied back
- Sleeves are rolled up
- Aprons are on
- Hands are washed
- Cuts are covered with blue waterproof dressing



Key Knowledge/Facts/Processes

How is fruit grown?

Fruit can grow on trees, on bushes and on plants that are near the ground. There are lots of different types of fruit, such as berries, melons and fruits with a stone, like peaches. The weather in different parts of the world is important for how well fruit can grow there.

How are vegetables grown?

Vegetables grow in three main ways. Firstly, some grow underground and are root vegetables, like potatoes. Secondly, some grow on vines, such as peas and pumpkins. Finally, some grow above ground and have strong roots, such as leeks and cabbages.

Are all fruit and vegetables prepared the same?

Most fruit and vegetables need rinsing in water before eating because they are grown outside and might have germs on their outer layers. Sometimes, there are parts of fruit and vegetables that we can't eat, which can be removed in many different ways like peeling.

Subject Specific Vocabulary

Fruit	A plant or tree's edible seed.
Nutrients	The things in food that the body needs to remain healthy.
Peel	To remove the skin from fruit and vegetables.
Pith	The soft, white lining inside fruit like oranges.
Salad	A cold dish of fresh fruit or vegetables.
Slice	To cut something with a knife.
Vegetables	Plants that can be used as food.

Year 2 DT Autumn Term – Wheels and Axles (Aeroplanes)

Design Brief/National Curriculum Objectives (KS1)

To design and create a model aeroplane that can move across a flat surface on wheels.

Design:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria;
- Generate, develop, model and communicate their ideas through talking, drawing, templates, [...].

Make:

- Select from and use a range of tools and equipment to perform practical tasks;
- Select from and use a wide range of materials and components, including construction materials, [...] according to their characteristics.

Evaluate:

- Explore and evaluate a range of existing products;
- Evaluate their ideas and products against design criteria.

Technical knowledge:

- Build structures, exploring how they can be made stronger, stiffer and more stable;
- Explore and use mechanisms in their products.

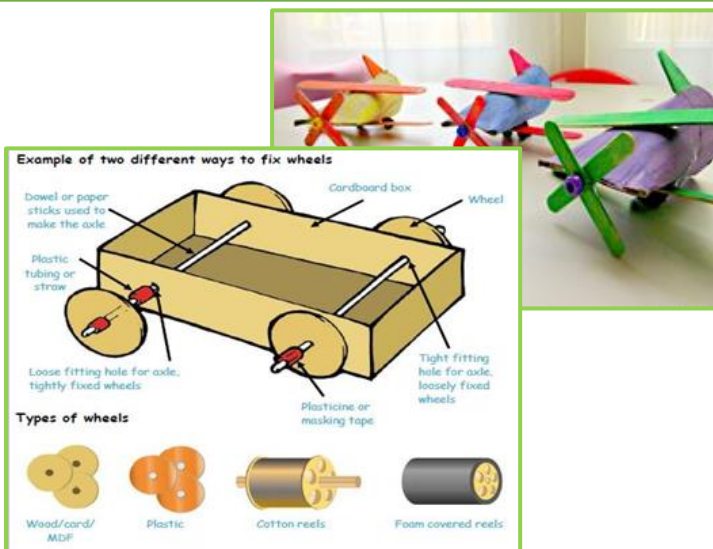
Key Skills

- To use their own ideas to make something;
- To explain to others how to make a product;
- To choose appropriate equipment and tools;
- To measure, mark out, cut out and shape a range of materials with help, including cutting along straight and curved lines and cutting out templates;
- To make a product with moving parts;
- To express likes and dislikes about what has been made and attempt to explain why;
- To talk about designs as they develop, identifying things that are good and things that could be changed.

Tools/Equipment/Ingredients



Diagrams/Images/Symbols



Subject Specific Vocabulary

Axle	A rod, either fixed or rotating, that passes through the centre of a wheel or group of wheels.
Chassis	The frame or base on which a vehicle is built.
Design	A plan or drawing produced to show the look or function of something.
Dowel	A wooden rod that is used to hold things together.
Fixed	To be fastened in place and unable to move.
Free Wheel	Where a wheel rotates without the axle rotating with it.
Friction	The resistance that happens when two things rub together.
Join	To connect something to another object.
Measure	To find out the size of something.
Mechanism	A device that creates and controls the movement of an object.
Rotate	To spin around a fixed point.
Strengthen	To make something stronger.
Vehicle	Anything that is used to transport people or goods.
Wheel	A circular object that rotates on an axle and allows an object to move.

Key Knowledge/Facts/Processes

How important is the wheel in everyday life?	A wheel is a simple machine. It allows things to roll and moves any object on top of it along the ground easily by rotating on an axle. Wheels were invented thousands of years ago and are used today in cars, wheelchairs, skateboards and even aeroplanes!
Why do wheels need axles?	An axle is important to any vehicle because it keeps the wheels in the right place and makes sure they stay the same distance apart all of the time. It also helps to support the weight of anything on top of it, such as the vehicles' chassis and the people inside it.
Who invented the first aeroplane?	The first working aeroplane that could be flown by a pilot took off in the USA in 1903. It was invented by Orville and Wilbur Wright and stayed in the air for 12 seconds! Aeroplanes today need wheels to help them take off and land on a runway safely.

Year 3 DT Autumn Term – Mediterranean and UK Food

Design Brief/National Curriculum Objectives (KS2)

To design and create a wrap or flat bread containing cold Mediterranean fillings.

Design:

- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups;
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams [...].

Make:

- Select from and use a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including [...] ingredients, according to their functional properties and aesthetic qualities.

Evaluate:

- 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 work.

Cooking and Nutrition:

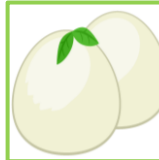
- Understand and apply the principles of a healthy and varied diet;
- Prepare [...] a variety of predominantly savoury dishes using a range of [...] techniques;
- Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Key Skills

- To compare and contrast the difference in key ingredients between a traditional Mediterranean and traditional UK diet;
- To create simple, annotated drawings of a product before production;
- To describe and explain the ingredients being used and the reasons for their choice, both verbally and in writing;
- To understand the need for a balanced diet;
- To use a range of preparatory skills, such as slicing and grating, safely;
- To use and understand basic food handling and hygienic practices, in particular the safe storage of raw foods.

Tools/Equipment/Ingredients

Dependent on the recipe, the possible ingredients and/or equipment could include:



Diagrams/Images/Symbols



Subject Specific Vocabulary

Analyse	To examine something in detail.
Appearance	How something looks.
Bacteria	Micro-organisms that can cause disease. A synonym for bacteria is germs.
Grate	To shred food into smaller pieces using a grater.
Nutrients	Things in food that the body needs to remain healthy.
Preference	To decide what you like best from several options.
Raw	Food that is not cooked.
Slice	To cut something with a knife.
Texture	How a product feels.
Unsaturated fat	Fat that is healthier to eat and an important part of a balanced diet.
Vegetables	Plants that are edible and used as food.
Wrap	A tortilla wrapped around a cold filling and eaten as a sandwich.

Key Knowledge/Facts/Processes

Where is the Mediterranean?	The Mediterranean Sea is in the south-western corner of Europe. Any country with a border on the Mediterranean Sea, such as France, Portugal, Italy or Spain, or any island country in it, such as Greece, Malta or Cyprus, make up the region.
What is a typical Mediterranean diet?	In general, a Mediterranean diet is made up of lots of fruit and vegetables grown in the region and very few dairy foods and meat. It also uses plenty of unsaturated fats like olive oil. The Mediterranean diet has been linked with good health, especially a healthier heart.
Why is it important to keep food cool?	Keeping food cool stops harmful bacteria from growing as fast because it doesn't like the cold. This means you will be more protected from food poisoning if you keep raw food in the fridge. Setting the temperature to 5°C will help with this.

Year 4 DT Autumn Term – Structures (Tudor Houses)

Design Brief/National Curriculum Objectives (KS2)

To design and construct a free-standing model of a working-class Tudor house.

Design:

- Use research and develop design criteria to inform the design of [...] functional [...] products that are fit for purpose, aimed at particular individuals or groups;
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes [...].

Make:

- Select from and use a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including construction materials [...], according to their functional properties [...].

Evaluate:

- 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 work;
- Understand how key events [...] in design and technology have helped shape the world.

Technical knowledge:

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

Key Skills

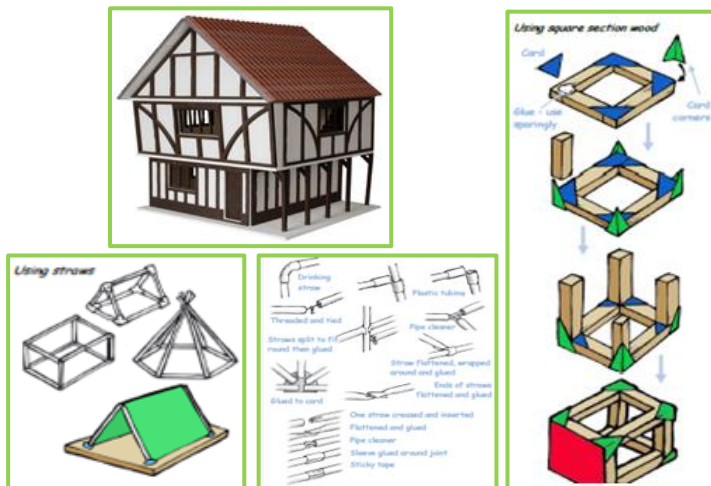
- To use and apply an understanding of how to strengthen, stiffen and reinforce more complex structures;
- To choose materials based on their strength and suitability;
- To measure and mark materials accurately, according to the most appropriate unit of measurement (mm/cm);
- To create a prototype design to help develop initial ideas further;
- To create a final product based on initial designs and prototypes;
- To work collaboratively to effectively evaluate and critique throughout the design process, identifying strengths and weaknesses as appropriate.

Tools/Equipment/Ingredients

Possible material choices could include:



Diagrams/Images/Symbols



Subject Specific Vocabulary

Adhesive	A substance used for sticking objects or materials together.
Arch	A curved structure that often supports a roof.
Architecture	The business of designing and constructing buildings.
Assemble	To fit, or put, parts together.
Compression	To apply pressure to squeeze an object.
Criteria	The points or standards to which something is judged or assessed.
Diagonal	A straight line from one corner to another inside a shape.
Evaluate	To judge or assess the strengths or weaknesses of something using criteria.
Frame	A solid structure used to surround something and reinforce it.
Horizontal	A line parallel to the ground.
Leaded	Windows or rooves that have frames made of lead.
Materials	Substances used to make something from.
Modelling	The process of making a 3D representation of a structure.
Prototype	A test version of a product which is used to help develop the final design.
Reinforce	To make a structure stronger.
Structure	A building, or other object, constructed from several parts.
Strut	Part of a structure under compression.
Tension	A force pulling on a material or structure.
Thatched	To cover a roof or building with straw.
Timber	Wood that can be used to construct buildings.
Triangulation	The use of triangular shapes to strengthen a structure.
Vertical	A line perpendicular to the ground.
Wattle and daub	Sticks and twigs woven together and covered with mud, dung or clay to make the walls of Tudor buildings.

Key Knowledge/Facts/Processes

Who were the Tudors?	The Tudors were the ruling dynasty of England for 118 years. Henry Tudor, who became King Henry VII, defeated King Richard III in battle in 1485: his son Henry VIII and his children, Edward VI, Mary I and Elizabeth I, later ruled the country until 1603.
What made Tudor architecture so different to medieval architecture?	Tudor architecture was a hybrid of many different styles from across Europe, in particular France and Italy. Buildings began to use different materials, such as bricks, and typical Tudor houses could be identified by their half-timber frames and leaded windows.
How were working-class Tudor houses made?	As with most Tudor buildings, working-class houses had a timber frame, which helped to stop water soaking through the walls, and were filled with wattle and daub. The roof was usually thatched, and inside the frame was often arched, known as cruck framing.

Year 5 DT Autumn Term – Structures (Iron Age Roundhouses)

Design Brief/National Curriculum Objectives (KS2)

To design and construct a free-standing model of an Iron Age roundhouse.

Design:

- Use research and develop design criteria to inform the design of [...] functional [...] products that are fit for purpose, aimed at particular individuals or groups;
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes [...].

Make:

- Select from and use a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including construction materials [...], according to their functional properties and aesthetic qualities.

Evaluate:

- 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 work;
- Understand how key events [...] in design and technology have helped shape the world.

Technical knowledge:

- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

Key Skills

- To use and apply an understanding of how to strengthen, stiffen and reinforce more complex structures;
- To choose materials based on their strength and suitability;
- To measure and mark materials accurately, according to the most appropriate unit of measurement (mm/cm);
- To create a prototype design to help develop initial ideas further;
- To create a final product based on initial designs and prototypes;
- To work collaboratively to effectively evaluate and critique throughout the design process, identifying strengths and weaknesses as appropriate.

Tools/Equipment/Ingredients

To make a wattle and daub roundhouse – the following links provide step by step walkthroughs and visual support that could be adapted to suit time/available materials/complexity, etc.:

<https://www.thesill.org.uk/make-your-own-roundhouse/>
<https://www.yac-uk.org/activity/build-a-mini-roundhouse>

Diagrams/Images/Symbols



Subject Specific Vocabulary

Adhesive	A substance used for sticking objects or materials together.
Assemble	To fit, or put, parts together.
Compression	To apply pressure to squeeze an object.
Criteria	The points or standards to which something is judged or assessed.
Daubing	To cover or coat something with a soft, sticky substance.
Diagonal	A straight line from one corner to another inside a shape.
Diameter	The distance between two sides of a circle, measured using a straight line through the centre.
Evaluate	To judge or assess the strengths or weaknesses of something using criteria.
Frame	A solid structure used to surround something and reinforce it.
Horizontal	A line parallel to the ground.
Materials	Substances used to make something from.
Modelling	The process of making a 3D representation of a structure.
Prototype	A test version of a product which is used to help develop the final design.
Reinforce	To make a structure stronger.
Stability	How stable something is.
Structure	A building, or other object, constructed from several parts.
Strut	Part of a structure under compression.
Tension	A force pulling on a material or structure.
Thatching	The process of covering a roof or building with straw.
Timber	Wood that can be used to construct buildings.
Triangulation	The use of triangular shapes to strengthen a structure.
Vertical	A line perpendicular to the ground.
Weaving	The process of forming an object by criss-crossing materials to link them.

Key Knowledge/Facts/Processes

When was the Iron Age?	The Iron Age began around 800BC and lasted until 43AD, when the Romans invaded and occupied prehistoric Britain. Like the Stone Age and Bronze Age, the Iron Age is named after the material used to manufacture its weapons, tools and ornaments.
Why were Iron Age houses round?	A roundhouse makes the maximum use of its internal space, allowing for such features as large, open fires. It is also thought that Iron Age people took inspiration from the shapes they found in nature, such as stones and tree trunks, to build their dwellings.
What were Iron Age roundhouses made from?	Typically, an Iron Age roundhouse had walls made of either stone or timber posts connected by daubing. Each roundhouse was topped with a thatched roof in a conical shape. The diameter of a roundhouse could measure between 5m and 15m in some cases!

Year 6 DT Autumn Term – Mechanics (Egyptian Shaduf)

Design Brief/National Curriculum Objectives (KS2)

To design and create an Ancient Egyptian shaduf mechanical system.

Design:

- Use research and develop design criteria to inform the design of [...] functional [...] products that are fit for purpose, aimed at particular [...] groups;
- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes [...].

Make:

- Select from a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including construction materials, [...] according to their functional properties [...].

Evaluate:

- 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 work;
- Understand how key events [...] in design and technology have helped shape the world.

Technical knowledge:

- Understand and use mechanical systems in their products.

Key Skills

- To design an appealing product with a clear purpose;
- To use scientific knowledge of forces to choose appropriate mechanisms for a product (e.g.: levers, winding mechanisms, pulleys, gears).
- To create and follow a step-by-step plan, choosing the most appropriate equipment, techniques and materials for each step;
- To create a prototype design to help develop initial ideas further;
- To measure and mark materials accurately, according to the most appropriate unit of measurement (mm/cm);
- To create a final product based on initial designs and prototypes;
- To work collaboratively to effectively evaluate and critique throughout the design process, identifying strengths and weaknesses as appropriate.

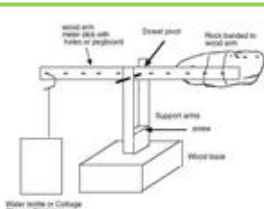
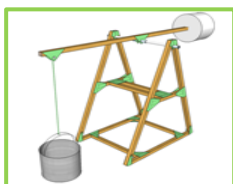
Tools/Equipment/Ingredients

A selection of available resources that could be adapted for making an Egyptian shaduf:

http://wiki.dtonline.org/index.php/Egyptian_Shaduf
<https://www.youtube.com/watch?v=wPaefGdXL80> ['How To' instructional video]

NB: See also p5-7 of 'Shadufs – Egyptian Lesson Sequence.pdf', available on Teams.

Diagrams/Images/Symbols



Subject Specific Vocabulary

Cams	A rotating or sliding part in a mechanical linkage.
Counterweight	An equivalent weight of force.
Criteria	The points or standards to which something is judged or assessed.
Evaluate	To judge or assess the strengths or weaknesses of something using criteria.
Force	A push or a pull which causes a change in speed, direction or shape.
Frame	A solid structure used to surround something and reinforce it.
Gear	A mechanism that uses cogs, which lock together and move each other to generate force.
Lever	A rigid bar which moves around a pivot.
Linear	To move along a straight line.
Linkage	A system of links.
Manipulate	To handle or control a mechanism.
Materials	Substances used to make something from.
Mechanical system	Set of related parts used to create movement.
Modelling	The process of making a 3D representation of a structure.
Pivot	The central point, or pin, on which a mechanism turns.
Prototype	A test version of a product which is used to help develop the final design.
Pulley	A mechanism of ropes and wheels used to pull heavy weights.
Rotary	Turning around a central point.
Tension	A force pulling on a material or structure.

Key Knowledge/Facts/Processes

Who were the Ancient Egyptians?	The Ancient Egyptians are one of the most powerful, intelligent and influential civilisations throughout history. They ruled across Egypt and Northern Africa from approximately 6000BC until being conquered by the Roman Empire in 31BC.
Why were shadufs so important in Ancient Egypt?	The River Nile was used by the Ancient Egyptians for many essential things, especially farming. A shaduf allowed farmers to easily collect water to irrigate their crops. Not only that, but shadufs may have been used to move heavy stones for constructing pyramids!
What are the differences between rotary and linear motion?	Rotary motion turns something in a circular pattern, whilst linear motion moves something in a straight line. As part of a mechanical system like a shaduf, cams allow rotary motion to be changed into linear motion, or linear motion into rotary.