DT Knowledge Organisers

Autumn Two - 2023

Year 1

KS1 D.T: TEXTILES KNOWLEDGE ORGANISER

Overview

Textiles

Textiles are flexible materials woven from fibres

-Textiles are used to make clothing, sheets, towels, linen, carpets, rugs and a wide variety of other products.

-Lots of materials are considered as textiles, for example wool, silk, cotton, nylon, felt and polyester.

-Textile production is one of the largest industries in the world – huge factories make millions of textiles each year.

-However, lots of small textiles producers still exist. Many still produce textiles by hand.

Example Textiles

Blankets and Quilts

Made with cotton

Decorated using appliqué templates

-Blankets and quilts are often made with cotton. It is an appropriate material for this purpose because it is soft and is a good insulator (it holds heat in well).
-Appliqué templates have been used to create the decorations. Appliqué is a sewing technique where fabric shapes are attached onto the main fabric. Templates can be made from many materials (e.g. card) and can formed around everyday objects, e.g. coins, coasters, bottles.

Children's Clothes

Made with cotton/ polyester

Decorated using appliqué templates

-Children's clothes are also often made using cotton, or with polyester (a man-made fibre that is strong and durable).
-In order to decorate clothes, the appliqué technique is often used. In this example, the designer has used appliqué to add the snow and reindeer to this green Christmas dress. They need to be attached securely!

Designing

Designers of textile products need to think about the purpose (what does it do?) and the user (who will use it?)

Materials -Different materials have different properties (characteristics) which make them good for different purposes. For example, cotton is soft, polyester is durable, and PUL is waterproof.

Templates -Templates should be used to cut around, producing accurate shapes and patterns. They can be made out of card, paper, cardboard and other materials.

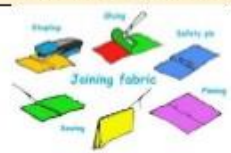
Joining – There are lots of different ways of joining fabrics together (see below). Some joins are quicker (e.g. stapling, safety pin) whilst some are more secure (e.g. sewing, gluing). Some joining techniques are easier to hide.

Key Vocabulary

- Textiles
- Fibre
- Woven
- Cotton
- Thread
- Needle
- Appliqué
- Template
- Seam
- Sew
- Design
- Make
- Evaluate

Making & Evaluating

Making



-Read your plan carefully. Make sure that you are properly prepared.
-Use masking tape or pins to attach your template, or use chalk/pastel to draw around it. If you are sewing, think about the type of stitch you will use (e.g. running stitch) in order to create your seam.
-Think about finishing techniques – for example glitter/ raised textile paints, adding sequins and shiny fabrics, or using fabric crayons.
-Remember your purpose – does it work?

Evaluating

-How does your textile look? Would your user like it? Why or why not? How could you improve the way it looks?
-Are your attached fabrics secure? How did you achieve this? How could they be joined more securely?
-Which materials did you choose? Why? How could you improve your product?

Health and Safety

- -Remove any jewellery and tie back long hair.
- -Walk safely and calmly around the classroom/ workshop.
- -When using a needle, keep your fingers well clear. Use a thimble where available.
- -When you are not using your needle, keep it in the same safe place.
- Follow the teacher's cutting instructions carefully.
- Make sure that you are wearing the correct equipment for tasks.
- If you need to move around with scissors, hold around the closed blades, facing down.
- Report any accidents & clean up properly after yourself.

Year 2

No DT this term.

Year 3

No DT this term.

Year 4

UKS2 D.T: FOOD AND NUTRITION KNOWLEDGE ORGANISER

Preparing and Cooking Processes

Preparing Processes

Preparing processes are the different ways that we get food ready to be eaten.

-**Slicing:** cutting food using a knife.

-**Mixing:** to blend ingredients together, using a spoon, blender, or whisk.

-**Weighing/measuring:** to get the right amount of an ingredient, using scales, table/teaspoons

Grating: to peel a layer off something (like carrots or cheese) using a peeler or grater.

-**Serving:** making food look nice on the plate.

-**Adding/ substituting:** changing the taste of food by adding or replacing ingredients.

Cooking Processes

Cooking processes are the different ways that we heat food before it is eaten.

-**Baking:** to cook food in a heated oven.

-**Boiling:** to cook food in boiling (100°C) water.

-**Frying:** to cook food in a pan of heated oil.

-**Grilling:** to cook food by putting it under a hot grill (like a radiator in a cooker).

-**Griddling:** to cook on a flat iron plate called a griddle.

-**Steaming:** to cook using steam, normally from boiled water.

-**Poaching:** to cook by simmering in a small amount of liquid.

A Healthy and Varied Diet

Food Groups

<u>You should now know how much to eat of each food group</u>

-**Fruit and vegetables** – Eat lots! About 5 portions per day.
Good for vitamins, minerals and fibre. Fresh, tinned and juices all count.
-**Carbohydrates** – Eat lots! Include in every meal.
Good for energy (carbohydrates), vitamins, minerals and fibre.
-**Proteins** – You should eat about 2-3 portions per day.
Good for muscle-building (protein), vitamins and minerals.
-**Dairy** – You should eat about 2-3 portions per day.
Good for muscle-building protein, vitamins and minerals.
-**Fats and Sugars** – Only eat occasionally and in small amounts.
Good for energy and fat reserves in small amounts. Cut down on saturated fats.

A Varied Diet

--<u>In order to stay healthy, it is important that we eat a balanced diet of foods from each of the five food groups. Too much of any one food group is not healthy for us.</u>

-You should be able to create a weekly **food plan**, incorporating a healthy and varied diet of foods across each day and the week.
-Your plan should apply your understanding of which foods within groups have advantages and disadvantages (e.g. 'fish has less fat than red meat' and 'use a low-fat butter alternative).
-You may even be able to understand calories and how they work, and count these in your food plan!

	MON	TUE	WED	THU	FRI
	Green Smoothie	Berry Smoothie	Creamy Smoothie	Super Smoothie	Berry Smoothie
	Easy Greek / Ginger Shot	Easy Greek / Ginger Shot	Easy Greek / Ginger Shot	Easy Greek / Ginger Shot	Easy Greek / Ginger Shot
	Balance Soup / Protein Bread (2 slices)	Glow Soup / Protein Bread (2 slices)	Nourish Soup / Protein Bread (2 slices)	Refuel Soup / Protein Bread (2 slices)	Balance Soup / Protein Bread (2 slices)
	Snack Bar	Snack Bar	Snack Bar	Snack Bar	Snack Bar
	Coconut Curry	Mac & Greens	Vegan Chilli	Coconut Curry	Vegan Chilli

Where Food Comes From

Grown, Raised, Caught

<u>It is important to know that foods are grown, raised and caught more easily during certain seasons. This is called seasonality.</u>

<u>Some food is **grown**</u>

- In order for us to get cucumbers, we need to <u>grow</u> a cucumber plant. Cucumbers grow on the vines of cucumber plants. In the UK, the cucumber season is between March and June, when they grow most naturally in the seasonal conditions.

<u>Some food is **raised**</u>

- In order for us to be able to eat chicken, we need to <u>raise</u> chickens. Eggs are <u>laid</u> by female chickens. In order to be sustainable, we need to know that most chicks are born in the spring/ summer seasons.

<u>Some food is **caught**</u>

- In order for us to get tuna, we need to <u>catch</u> the tuna-fish. There are also seasonal changes for caught food, as animals can migrate. E.g. a lot of tuna is caught between November-May in the Pacific off San Francisco.

Eating Sustainably

-With modern technology, it is possible to grow and rear food out of season.

-However, growing and rearing foods out of season consumes a lot of energy, because the process takes place in artificial conditions, and needs a lot of resources, for example heat, light, water and nutrients.

-Eating sustainably is about finding the right balance between your food needs and your food choices. It helps to reduce our <u>carbon footprint.</u>

Key Vocabulary

- Healthy & Varied Diet
- Food/Meal Plan
- Calories
- Saturated Fat
- Adding/ Substituting
- Griddling
- Steaming
- Poaching
- Seasonal Produce
- Seasonality
- Sustainability
- Health & Safety

Food from Around the World

Seasonal Foods around the World

-It is important to remember that the seasons are different in different places over a year.

-In the <u>northern hemisphere</u>, spring takes place between March and May. In the southern hemisphere, spring is September to November.

Therefore, <u>foods are in season in different places at different times of the year</u>. Cucumbers can be naturally grown in the northern hemisphere March-June, and in the southern hemisphere October-December.

UK Seasonal Foods

Winter: Apples, Beetroot, Sprouts, Cabbage, Leeks, Mushrooms, Onions, Parsnips, Pears, Turnips.

Spring: Artichokes, Asparagus, Aubergines, New Potatoes, Rhubarb, Rocket, Spinach, Spring Greens, Spring Onions.

Summer: Blackcurrants, Broad Beans, Cherries, Chillies, Courgettes, Gooseberries, Garlic, Strawberries, Water Cress.

Autumn: Butternut Squash, Cauliflowers, Chicory, Elderberries, Marrow, Pumpkin, Wild Mushrooms, Squash.

Health and Safety

-Remove any jewellery and tie back long hair. Ideally, wear a hair net.	-Wear an apron and roll up your sleeves. Tie your apron securely.	-Wash your hands with hot water and antibacterial soap, for at least 20 seconds.	Washing your hands should be done before, during and after preparing food.	Use different chopping boards and knives for raw meat & other foods. This stops bacteria spreading.	Use a food thermometer to check that food is cooked through.	Check the dates on food, and check for allergies & diet e.g. vegetarian, vegan.	Make sure that you clean up properly after yourself.

Year 4

KS2 D.T: MECHANISMS KNOWLEDGE ORGANISER

Overview

Gears and Pulleys

Mechanisms are the parts that make something work.

-Mechanisms are all around us. A set of related mechanisms used to create movement is called a mechanical system.

-Gears are toothed wheels (cogs) that lock together and turn one another. When one gear is turned the other turns as well.

The wheels are usually different sizes, so that one gear speeds up to slow down the next gear. They therefore increase the power of a turning force.

-Pulleys are like gears, but the wheels do not lock together. The wheels are instead joined together by a drive belt. Pulleys can be used to affect the speed, direction or force of a movement.

Example Mechanisms

Flag/Flagpole

-A flag being raised/ lowered on a flagpole is a prime example of a pulley mechanism in action. The rope or belt pulled by the user fits into a groove in wheels at the top and bottom of the flagpole. This switches the direction of the force needed to lift/ lower the flag up and down the post.

Can Opener

-A can opener is an example of a gear mechanism in action. When you turn the handle, it turns a small, round, metal traction gear. The notches in the gear allow it to grip onto the lip of the can. As the wheel moves around the rim of the can, the cutting wheel on the other side of the lip opens the can.

Bicycle Gears

-Bicycle gears are an example of a multiple gear and pulley mechanism in action. The size of the gears (and number of teeth) determines how many times the rear wheel turns for every pedal stroke. A lower, easier gear (small chain ring, big cog) helps the user to accelerate faster, whilst a higher, harder gear (big chain ring, small cog)

Designing

Below are some of the main considerations of a design process for a toy vehicle.

Chassis, Axle, Wheels

-You will need to draw on your prior knowledge of chassis, axle and wheel systems. The chassis is the frame or base on which the vehicle is built. The chassis should include axle holders. Your axle needs to be strong enough to hold the wheels, and fit freely in the axle holder. Consider the materials of your wheels.

Gears and Pulleys

-The vehicle can run using either a gear or pulley mechanical system.

-In either case, you need to understand the ratio (how often larger wheels turn in relation to smaller pulleys). With gears, this can be done by counting the number of teeth (see right).

No.Teeth	Ratio (spins)
8 and 16	2 : 1
8 and 24	3 : 1
24 and 24	1 : 1
8 and 40	5 : 1

As a part of the design process, you should be able to sketch and annotate different ideas. You should also be able to plan the main stages of making, using either a checklist, a storyboard, or a flowchart.

Key Vocabulary

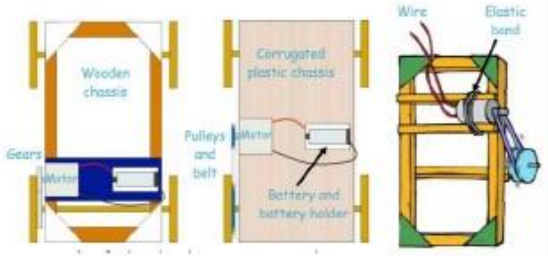
- Mechanism
- Mechanical System
- Gear
- Pulley
- Lever
- Cogs
- Force
- Drive Belt
- Driver
- Follower
- Motor Spindle

Making & Evaluating

Making - Mechanical System

-In order for the vehicle to move, it is essential that the mechanical system is planned effectively, and include an input, a process, and an output.

-e.g. Batteries hold stored power, accessed by using a switch (input) to enable a motor to set in motion the motor spindle Motor spindles can attach the motor to the gears/ pulley system (process)., which in turn propels the axles and/or wheels to move the vehicle forwards/ backwards (output).



Evaluating

-How well does your mechanical system work? Does it move smoothly?

-Does it meet its purpose?

-What would your audience think about your product? What would they like about it? What would they not like?

-What problems did you face in constructing your mechanical system? What changes did you need to make?

What could you still improve about your product? How would you do things differently next time?

Health and Safety

- -Remove any jewellery and tie back long hair. Wear an apron.
- -Follow guidelines for working with electrical equipment.
- -Walk safely and calmly around the classroom/ workshop.
- Keep your work area and floor area clear – keep your belongings well clear.
- Follow the teacher's instructions for using equipment carefully.
- Make sure that you are wearing the correct equipment for tasks.
- Return all equipment to the correct zoned areas of the classroom/ workshop.
- Report all spillages & clean up properly after yourself.

Year 6

No DT this term.