DT Knowledge Organisers

Spring 2 2025-26

Year 1

Hanslope Primary School
Design Technology Knowledge Organiser

Year 1: Textiles (Templates and Joining Techniques)

Overview

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.

What key vocabulary will I learn?

Textiles, fibre, woven, cotton, thread, needle, appliqué, template, seam, sew, design, make, evaluate.

How does this link to my future learning?

- Year 3 Textiles (2D and 3D products)

National Curriculum Links:

- Design, make and evaluate products
- Technical knowledge: select from and use a wide range of materials and components, including textiles.

What steps will I follow to create my final product?

Design:

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.

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 jewelry 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.	If using a sewing machine, follow staff 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

Hanslope Primary School
Design Technology Knowledge Organiser

Year 2 – Freestanding structures

National Curriculum Links:

- Design, make and evaluate products
- Technical knowledge: apply their understanding of how to strengthen, stiffen and reinforce structures.

Overview

Structures are things that are built for a purpose.

-Structures can be large (e.g. buildings and bridges) or small (e.g. chairs and tables).

-Freestanding structures are structures that can stand up without being attached to something else.

-Freestanding structures need to support their own weight and also the weight of the things/people using them.

So that they can do this, freestanding structures need to be well-designed: strong, rigid and stable

How does this link to my future learning?

- Shell structures – Year 4

What key vocabulary will I learn:

Structure	Base
Freestanding	Materials
Support	Layering
Weight	Design
Strong	Make
Rigid	Evaluate
stable	

What steps will I follow to create my final product?

Designing: - A structure that is stable.

-Structures are more stable when they have a wider base.

-Some materials are stronger and more rigid than others, e.g. card is stronger and more rigid than paper.

-Structures can also be made stronger and more rigid by making sure that parts and materials are properly joined together, e.g. with glue or tape.

-Folding and adding an extra layer of materials can also be used to strengthen and stiffen structures

Making:

Read your plan carefully. Make sure that you are prepared.

-Think about the skills you will need to use (e.g. cutting, assembling sticking) and the tools that you will need for them (e.g. scissors, glue).

-Think about finishing techniques (e.g. adding buttresses/extra layers for strength, or colour to make your structure look well presented!)

-Remember your purpose – does it work?

Evaluating: -How well does your structure work? Does it meet its purpose? How did you make your structure stable? How could you make it more stable? How did you make your structure strong and rigid? How could you make it more strong and rigid?

Health and Safety

-Remove any jewelry 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.	If using a sewing machine, follow staff 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 3

No DT this term.

Year 4

Hanslope Primary School
Design Technology Knowledge Organiser

Year 4: Structures (shell structures)

Overview:

You should already know that structures are things that are built for a purpose, for example to support something or hold something.

-Shell Structures are structures with a solid outer surface (which may be curved or flat) and a hollow inner area.

-Shell structures can serve many different purposes. Often, they are used to protecting, containing and/or presenting (e.g. packaging).

-Some examples of shell structures are food packaging, tunnels, helmets, drinks cans, and boats.

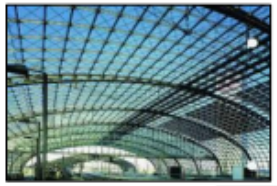
-A rounded outer surface is particularly strong, because it spreads forces throughout the whole structure, which means every part of the structure supports only a small part of the load.

How does this link to my future learning?

- **Structures (strong frame structures)**- (Year 6)

What key vocabulary will I learn:

Structures	Font
Shell Structures	Durable
Packaging	3D Nets
Purpose	Tabs
Forces	Folding/Layering
Style	Corrugating/ Ribbing



National Curriculum Links:

- Design, make and evaluate products.
- Technical knowledge: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

What steps will I follow to create my final product?

Designing:

Shell structures may be used to contain things.

-The structures need to be able to take the weight of their contents.

-Consider the 3-D shapes that are most appropriate for this purpose: cubes, cuboids, prisms, are all possibilities.

-Remember, curved shell structures are effective at spreading weight evenly.

Shell structures may be used to protect things.

-The materials used are important for protecting interior contents. Some shell structures can be shaped to fit their contents, protecting them from movement and damage (e.g. egg cartons).

-Shell structures can be stiffened through folding, layering, corrugating, ribbing or lamination.

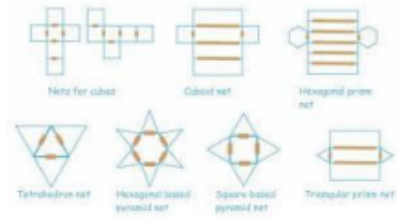
Making:

-Nets can be used to make 3D products.

-Scoring is the process of marking a sheet to make it easier to fold.

-Outer edges of the net can be cut out (apparatus depends on material).

-Tabs are additional strips on the net that can be scored and folded to make a surface for sticking vertices together.



Evaluating: How well does your structure work? Does it meet its purpose? How did you make your shell structure strong and durable? How could you make it more stable? Which materials did you use? Why did you make these choices? How does you product protect and contain? How could it do this more effectively?

Health and Safety

- -Remove any jewelry and tie back long hair. Keep belongings clear.
- -Wear an apron where necessary and roll up your sleeves.
- -Walk safely and calmly around the classroom/ workshop.
- Keep your work area and floor area clear – regularly tidy up to avoid accidents.
- Follow the teacher's cutting/ machinery instructions carefully.
- Make sure that you are wearing the correct equipment for tasks, including safety goggles.
- Should you need to move around with sharp objects, hold them appropriately.
- Report and clean all spillages & other potential hazards.

Year 5

Hanslope Primary School
Design Technology Knowledge Organiser

Year 5: Mechanisms (pulleys or gears)

Overview:

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.

How does this link to my future learning?

- **Design, make and create in KS3**

National Curriculum Links:

- Design, make and evaluate products
- Technical knowledge: understand and use mechanical systems in their products [for example, gears, pulleys, cams]

What key vocabulary will I learn?

Mechanism, mechanical system, gear, pulley, lever, cogs, force, driver, follower, motor spindle.

What steps will I follow to create my final product?

Designing

Gears and Pulleys

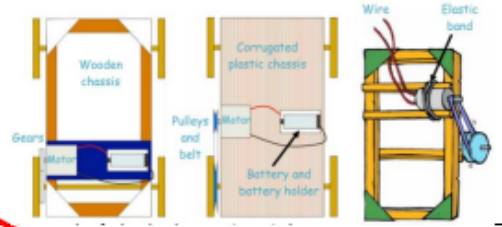
-The product can run using either a gear or pulley mechanical system.
-In either case, you need to understand the ratio (how often larger wheels turn in relation to smaller pulleys). With gears, this can be done by counting the number of teeth (see below).

Num. Teeth	Rotation (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.

Making

-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 mechanism 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 jewelry and tie back long hair.
-Wear an apron and roll up your sleeves.
-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 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 all spillages & clean up properly after yourself.

Year 6

No DT this term.