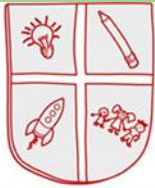




# DESIGN & TECHNOLOGY IMPLEMENTATION



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## Design and Technology - Implementation

### Approach – Knowledge

At Barrow Primary School, Design and Technology is taught across each year group in modules that enable pupils to develop in creativity, independence, judgement and self-reflection. Each module aims to activate and build upon prior learning, including EYFS, to ensure better cognition and retention.

As a school we look to master practical skills relating to Design and Technology which involves developing the skills needed to make high quality products. Through this a child will design, make, evaluate and improve their creations allowing children to develop an understanding of design thinking and seeing their designs as a process. We also want children to take inspiration from design throughout history this will involve appreciating the design process that has influenced the products we use in everyday life.



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## Design and Technology - Implementation

### Planning

All modules have a sequenced overview outlining recommended number of sessions, key concepts, knowledge and vocabulary to be taught. Teachers use this overview to plan individual sessions approximately 45-50 minutes in length. All planning is produced on using or Discovery Planning template which incorporates cooperative learning techniques, key vocabulary, core concepts and a class profile to enable all teaching staff to effectively plan and support the needs of all pupils in the classroom.

CUSP Design & Technology Long term sequence	Block A	Block B	Block C	Block D	Block E	Block F
Year 1	Mechanisms	Structures	Food and Nutrition	Understanding Materials	Textiles	Food and Nutrition
Year 2	Textiles	Food and Nutrition	Mechanisms	Understanding Materials	Food and Nutrition	Structures
Year 3	Textiles	Food and Nutrition	Mechanisms	Food and Nutrition	Systems	Structures
Year 4	Food and Nutrition	Mechanisms	Textiles	Structures	Electrical Systems	Food and Nutrition
Year 5	Food and Nutrition	Systems	Textiles	Mechanisms	Structures	Food and Nutrition
Year 6	Food and Nutrition	Mechanisms	Food and Nutrition	Structures	Electrical Systems	Textiles

**Long term overview:** Where each block sits within the long term curriculum sequence is indicated here.

### Lesson sequence:

A summary of the key skills and techniques covered in the three lessons is recorded here.

Lesson 1	Lesson 2	Lesson 3
Identification of the problem  Exploring materials	Explicit teaching of skills relating to the brief	Application of skills  Evaluation and adaptation



Frei Otto Retrospective  
by Gisela Stromeyer Designs



Gisela Stromeyer

At the end of this block, pupils will ...	
Know:	Be able to:
Fabric can be stiffened	Select and apply solutions to stiffen fabric
Stiffened fabric can hold a form	Make a box using stiffened fabric

This list of expected outcomes provides details of the knowledge and skills pupils will be expected to have acquired by the end of the block.

In this block, pupils will explore ways to stiffen fabric. They will have the opportunity to cover a box with cloth and then go on to create a rigid box out of fabric.

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## Knowledge Notes

Accompanying each module is a Knowledge Note which contains key vocabulary, information and concepts which all pupils are expected to understand and retain. Knowledge notes are the elaboration and detail to help pupils acquire the content of each module. They support vocabulary and concept acquisition through a well-structured sequence that is cumulative. Each Knowledge Note contains key vocabulary and key facts for the focus module.

Year 3: Textiles  
*How can you make a box out of cloth?*



**Core content:**

Explore ways to stiffen fabric.  
Cover a box with cloth.  
Create a rigid box out of fabric.

**Technical vocabulary:**

**Starch** – a white substance that comes from potatoes and grains and is used to make cloth stiff.  

**PVA glue** – an adhesive used to secure or 'paste' things like clothing, paper and wood. 

**Gelatin** – a virtually colourless and tasteless protein used in food preparation, photographic processes and glue. 

**Stiffen** – to make something, such as cloth, hard and unable to bend. 

**Interfacing** – an additional layer applied to the inside of garments to add firmness, shape and structure. 

**Cloth** – woven or felted fabric made from wool, cotton or a similar fibre. 

**Connections:**

Gisela Stromeyer  
New York-based artist, architect,  
dancer and teacher



Frei Otto Retrospective  
by Gisela Stromeyer Designs



**Core content:** Pupils are provided with a brief summary of the content of each block.

**Technical vocabulary:** Key technical vocabulary that is covered in each block provides useful glossary of terms for pupils to refer to. Icons have been used to aid understanding of terms.

**Connections:**

Images, showing examples of designers or samples of their work, are presented so that pupils can refer to these as a reminder of people they have studied and their associated styles or hallmarks.



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## Vocabulary

Vocabulary forms a key part of our wider curriculum. Subject specific Tier 2 and Tier 3 words are incorporated in each module and pupils are encouraged to develop their own 'Vital Vocabulary' lists along with dual coding to expand their science vocabulary repertoire.

## Oracy

When discussing their findings or presenting information, pupils are encouraged to speak using full sentences and incorporating the key scientific vocabulary. Pupils are supported to develop their oracy skills across the school with the use of 'Ask me about...' stickers, where adults and children can ask each other about aspects of their learning.

## Vocabulary quiz

These tasks are for pupils to undertake after the block has been completed. It contains a range of questions requiring simple written responses covering the following: analysing words, defining words, making connections to other known words and using words in context. Technical vocabulary listed in the Knowledge Note is included in this section along with other key vocabulary that is used in the block.

### Oracy and Vocabulary: Y3 Textiles – Block A

**Task 1:**  
Order these adjectives from least rigid to most rigid.

supple	solid	firm	flimsy	flexible

Exploration:

1. Do the words *firm* and *brittle* mean the same thing?
2. What is the difference between *flexible* and *flimsy*?

1. Does adding twice as much stiffening solution make the fabric twice as rigid?
2. Which stiffening solution is most effective to make fabric more rigid? How do you know?
3. Does thicker fabric need less stiffening solution to make it rigid?

### Task 2:

How successful were you in creating boxes from fabric?  
Answer these questions to evaluate and reflect on your work.

1. How strong and rigid was the box you made from strips of fabric?
2. What could you do to make the box stronger and more rigid?

3. Write the steps you completed to create a box from fabric paper.
4. A pupil is struggling to form their box from the fabric paper. What advice would you give them?

5. Which method do you think was the most effective one to use to make a fabric box? Explain your choice.
6. What improvements could you make to your fabric boxes?

OWN-it	Analyse	KNOW-it	Define
Underline the root word.	stiffened	Write the word that matches this definition. a woven or felted fabric	
Underline the part of this word that means between.	interface	Complete this sentence. Gelatine is used _____	
Underline the adjective.	stiff stiffen	Tick the most accurate definition of interfacing. <input type="checkbox"/> an additional layer used to add firmness to fabric <input type="checkbox"/> a type of thick fabric	
LINK-it	Connect	USE-it	Use in context
Write two words that begin with the prefix <i>stiff</i> .		Use the word <i>starch</i> in a sentence.	
Write two synonyms of the word <i>cloth</i> .		Tick the box if the word <i>rigid</i> has been used correctly. The box was very rigid and was easily bent.	
Tick the word that does not mean the same as <i>rigid</i> .	<input type="checkbox"/> rigid <input type="checkbox"/> flexible <input type="checkbox"/> solid	Write a sentence using the words <i>starch</i> , <i>fabric</i> and <i>stiffen</i> .	



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## Resources

Accompanying each module is a list of resources needed to teach and implement Design Technology across the year groups for the whole of the year needed. They are contained on an excel spreadsheet under year groups and are a comprehensive and detailed list including quantities needed per child, per year group.

CUSP DT Resources - Block A and Block B (Autumn Term)				
		Open in Desktop App or download to enable links.		
		To view resources for a particular year group, click on the year group below.		
	Year 1	Year 2	Year 3	Year 4
	Year 4	Year 5	Year 6	Year 7
Block	Item	Description	Quantity	Notes
Year 6 - Block B	gears (wooden or plastic)	range of sizes (4 - 10cm)		
	card	3 - 5mm thick	3 x A3 sheet per pair / group	to make main structure of Ferris wheel
	craft knives		1 per pair / group	to cut card for model Ferris wheels
	cutting mats		1 per pair / group	
	wooden strips	10mm-square cross section	1 metre per pair / group	
	nuts and bolts	same diameter as holes on gears	30 for whole teaching group	
	glue guns and glue		1 per pair / group	
	scissors		1 pair per pair / group	
	plain paper	A4 sheets	2 sheets per pair / group	
	felt-tip pens			to decorate / colour Ferris wheels
	paints			to decorate / colour Ferris wheels
	double-sided sticky tape		1 roll per pair / group	
	masking tape		2 rolls per pair / group	
	Blu Tack®		enough for whole teaching group	
	split pins			
	transparent plastic	very thin (acetate)	5 x A4 sheet for whole teaching group	
	lolly sticks		100 per teaching group	
	dowel rod	4mm, 6mm, 10mm diameter		
	handsaws	tenon saws or junior hacksaws	1 per pair / group	to cut wooden strips, dowel and metal rod
	bench hooks		2 per pair / group	
	metal rod / wire	approx. 2 - 3mm diameter	4 metres for whole teaching group	
	paper clips		100 for whole teaching group	





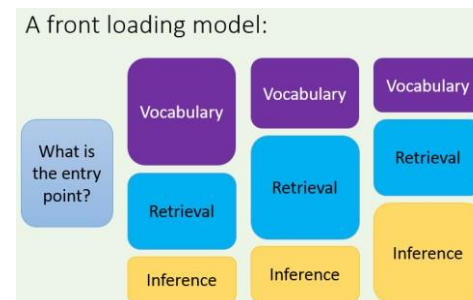
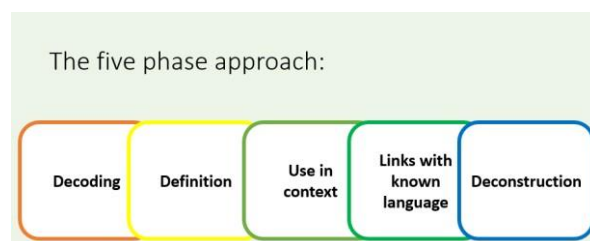
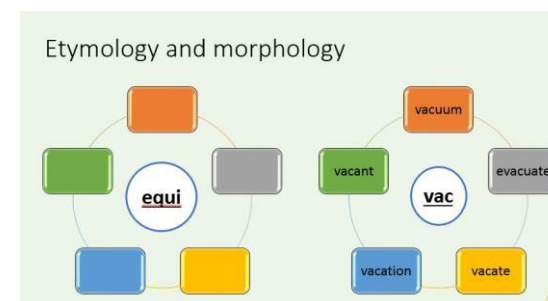
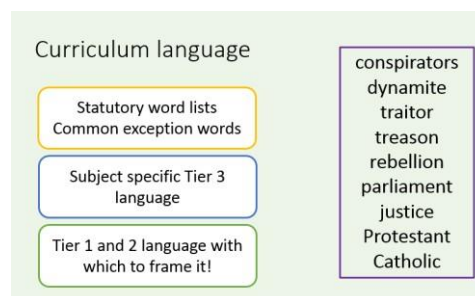
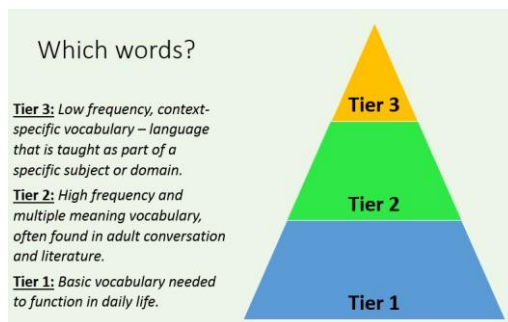
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## Continuous Professional Development

All staff have undergone CPD in Cognitive Load Theory, Spaced Practice Retrieval Theory and planning the wider curriculum which has supported the development of a modular wider curriculum.

In addition, staff have been trained in the Theory of Reading which emphasises the importance of teaching reading across all subjects and how to teach vocabulary – including etymology and morphology.



Teachers are encouraged to develop their subject knowledge by accessing resources in school and online.

Further training is scheduled to support teachers to plan and facilitate



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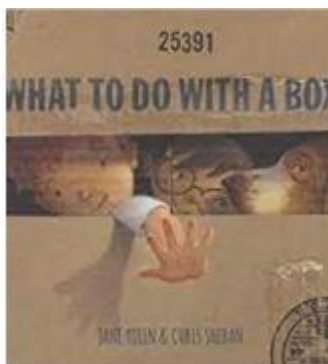
## Points of reference

Where appropriate, design and technology modules will include high quality texts for pupils to engage with. Our CUSP Design and Technology curriculum includes links to literature across some blocks. Unity Schools Partnership are working closely with Curriculum Visions to ensure our subject content has supporting materials which can be accessed by pupils in school and at home

### Links to Literature:

*What to Do with a Box* by Jane Yolen  
*On Sudden Hill* by Linda Sarah  
*The Most Magnificent Thing* by Ashley Spires

Links to Literature: Links that are made in the lesson sequences to works of literature are listed here. Specific books and illustrators are recommended and used as a stimulus.







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## Assessment

D&T is assessed at the end of each unit (half termly).

Teachers will assess each child against our assessment criteria (below) using our whole-school assessment system 'Insight'.

The children are scored on a scale from 0-3

0- Taught but not understood

1- Some evidence but not yet secure

2- Objective secure

3- Working at Greater Depth

### Y1 Objectives

☐ Food, Fruit & Vegetables

☐ Mechanisms: Making a Moving Story Book

☐ Structures: Constructing a Windmill

☐ Textiles: Puppets

☐ Mechanisms: Wheels & Axles

### Y2 Objectives

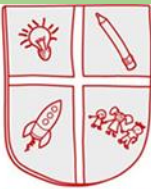
☐ Mechanisms: Fairground Wheel

☐ Food: A Balanced Diet

☐ Mechanisms: Making a Moving Monster

☐ Structures: Baby Bear's Chair

☐ Textiles: Pouches



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## Y3 Objectives

- ☐ Textiles: Cushions
- ☐ Electrical Systems: Static Electricity
- ☐ Mechanical Systems: Pneumatic Toys
- ☐ Digital World: Electronic Charm
- ☐ Food: Eating Seasonally
- ☐ Structures: Constructing a Castle

## Y5 Objectives

- ☐ Mechanical Systems: Pop-up Books
- ☐ Digital World: Monitoring Devices
- ☐ Food: What Could Be Healthier
- ☐ Structures: Bridges
- ☐ Textiles: Stuffed Toys
- ☐ Electrical Systems: Electronic Greeting Cards

**Assessment** continued...

## Y4 Objectives

- ☐ Electrical Systems: Torches
- ☐ Mechanical Systems: Making a Slingshot Car
- ☐ Digital World: Mindful Moments Timer
- ☐ Food: Adapting a Recipe
- ☐ Structures: Pavillions
- ☐ Textiles: Fastenings

## Y6 Objectives

- ☐ Digital World: Navigating the World
- ☐ Food: Come Dine With Me
- ☐ Structures: Playgrounds
- ☐ Textiles: Waistcoats
- ☐ Electrical Systems: Steady Hand Game
- ☐ Mechanical Systems: Au
- ☐ Mechanical Systems: Automata Toys

## **What does Greater Depth look in Design & Technology?**

Creating the opportunity for greater depth in Design Technology involves allowing pupils the independence to apply their learning at a deeper level. They are the pupils who take an idea or a new skill and adapt it or develop it further independently.

This means that pupils working at Greater Depth will be able to:

- GD pupils will work independently
- GD pupils will demonstrate a creative response to the problem
- GD pupils will stick tightly to the brief and consider the end user's needs and preferences throughout the process
- GD pupils will think critically about and comment on other products and their own product
- GD pupils will likely amend their product to improve its outcome
- GD pupils will display high quality presentation and precision throughout the process of design and make

### **Good achievement and challenge are evident when pupils:**

- demonstrate a secure understanding of who they are designing and making for, the purpose of the product and how it would work, and the specific criteria their product must meet to be successful
- communicate their innovative ideas and plans clearly and modify their designs and prototypes in light of their testing and evaluation
- develop technical competence, applying measurement and using tools and components with increasing accuracy to safely make well-finished products
- draw effectively upon their scientific understanding and their knowledge of mechanisms to create and explain how their products work

use an increasingly technical vocabulary when talking or writing about what they might change as their work develops

# Design and Technology – EYFS – KS1

	<b>ELG 16</b> <b>Creating with Materials</b>	<b>How this is achieved in EYFS</b>	<b>Art and Design KS1</b>
	<ul style="list-style-type: none"> <li>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</li> <li>Share their creations, explaining the process they have used.</li> </ul>	<p>Children can self-select from a range of tools and materials in the continuous provision. Children learn by experimenting with tools such as scissors, staplers and hole punches.</p> <p>They make use of fixing and joining materials such as sellotape, masking tape, string, pipe cleaners and glue.</p> <p>Through questioning children are encouraged to talk about what they like about their work and other children's designs and how they would improve it.</p> <p><b>Activity Examples:</b></p> <ul style="list-style-type: none"> <li>Designing and making a kite on a windy day, choosing the best materials.</li> <li>Building a minibeast hotel outside.</li> <li>Creating vehicles outside with large bricks.</li> <li>Construction of houses, bridges and boats in the outdoor Builders Yard.</li> <li>Using junk model boxes to create vehicles inspired by Naughty Bus story.</li> <li>Using tools to prepare snack – E.g. cutting bananas.</li> <li>Selecting the best resources for den building outside.</li> <li>Cookery - Observing the effects of heat when melting chocolate when making Easter nests.</li> </ul>	<p><b>Design</b></p> <p>Design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p><b>Make</b></p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]. Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p> <p><b>Evaluate</b></p> <p>Explore and evaluate a range of existing products.</p> <p>Evaluate their ideas and products against design criteria.</p> <p><b>Technical knowledge</b></p> <p>build structures, exploring how they can be made stronger, stiffer and more stable.</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p>