



## Map of the Design and Technology Curriculum

### What are the Knowledge, Skills and Understanding we want our pupils to gain?

NR, Nov 2019

**Intent of our Design and Technology curriculum** – To develop our children’s problem solving skills through a design and production process that draws upon their imagination and relies upon a supported development of technical and practical skills. We would like our children to realise the impact they can have on the world by both studying influential design innovations and utilising their own skills in a creative and thoughtful manner. Deeper thinking will be fostered with focussed recall questioning, ensuring knowledge is built upon within a threshold before moving on.

#### Year A

	Term 1	Term 2	Term 3	Term 4	Term 5 & 6
<b>EYFS</b>	<i>Teaching of Design and Technology is not discreet in the Early Years but children will learn about ‘Expressive arts and design: Exploring and using media and materials (including using different media combined to create a new effect; using simple tools and techniques – to shape, assembly and join; selecting appropriate resources and adapting work as necessary).</i>				
<b>KS1</b>	<b>Topic – Who’s coming to tea?</b> - select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics - use the basic principles of a healthy and varied diet to prepare dishes - understand where food comes from.	<b>Topic – A fire</b> -build structures, exploring how they can be made stronger, stiffer and more stable	<b>Topic – How do I get to?</b>	<b>Topic – Where are all the wild things?</b>	<b>Topic – Once upon a time</b>

<p><b>Lower KS2</b></p>	<p><b>Topic – North, East, South, West</b></p>	<p><b>Topic – Extreme Survival</b></p>	<p><b>Topic – Rise of the robots</b></p> <ul style="list-style-type: none"> <li>-investigate and analyse a range of existing robots/machinery</li> <li>-evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</li> <li>- 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</li> <li>- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</li> <li>-understand and use mechanical systems in their products [for example gears, pulleys, cams, levers and linkages]</li> <li>-understand and use electrical systems in their products [for example series circuits incorporating switches, bulbs, buzzers and motors]</li> </ul>	<p><b>Topic – Down in the Valley</b></p> <ul style="list-style-type: none"> <li>-Viaduct - understand how key events and individuals in design and technology have helped shape the world</li> <li>-apply their understanding of how to strengthen, stiffen and reinforce more complex structures.</li> </ul>	<p><b>Topic – Escape from Pompeii</b></p>
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			-apply their understanding of computing to programme, monitor and control their products.		
<b>Upper KS2</b>	<b>Topic - Chocolate</b> -understand and apply the principles of a healthy and varied diet and understanding the impact of chocolate in a healthy diet both with high and low percentages of cocoa -understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed with a focus on cocoa beans.	<b>Topic – Why aorta keep fit</b> -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	<b>Topic – Get off Me Land</b>	<b>Topic – Were we a fish</b>	<b>Topic – Dragon’s Den</b> -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 -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, prototypes, pattern pieces and computer-aided design

**Year B**

	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>	<b>Term 4</b>	<b>Term 5 &amp; 6</b>
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<b>EYFS</b>	<i>Teaching of Design and Technology is not discreet in the Early Years but children will learn about 'Expressive arts and design: Exploring and using media and materials (including using different media combined to create a new effect; using simple tools and techniques – to shape, assembly and join; selecting appropriate resources and adapting work as necessary).</i>				
<b>KS1</b>	<b>Topic – Our amazing world</b>	<b>Topic – Toy Story</b> - explore and evaluate a range of existing products - evaluate their ideas and products against design criteria -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, mock-ups and, where appropriate, information and communication technology - explore and use mechanisms [for example levers, sliders, wheels and axles] in their products.	<b>Topic – We are artists</b> - select from and use a range of tools and equipment to perform practical tasks such as 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	<b>Topic – Maps and routes</b>	<b>Topic – Weather and seaside</b>
<b>Lower KS2</b>	<b>Topic – Going Global</b> -T-shirts - generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	<b>Topic – Raiders and traders</b> -understand how key events and individuals in design and technology have helped shape the world -apply their understanding of how to strengthen, stiffen and reinforce more complex structures by	<b>Topic – Egypt</b> -select from and use a wider range of tools and equipment to perform practical tasks [for example cutting, shaping, joining and finishing] accurately -select from and use a wider range of materials and components, including	<b>Topic – Rainforest</b>	<b>Topic – Dig for Victory</b> -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

	-apply their understanding of computing to programme, monitor and control their products.	creating and testing Viking Longboats.	construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities		variety of ingredients are grown, reared, caught and processed.
<b>Upper KS2</b>	<p><b>Topic – What’s out there</b></p> <p>-understand how key events and individuals in design and technology have helped shape the world with a focus on space exploration</p>	<p><b>Topic – Who let the Gods out?</b></p>	<p><b>Topic – Victorious Victorians</b></p> <p>-select from and use a wider range of tools and equipment to perform practical tasks [for example cutting, shaping, joining and finishing] accurately, comparing what Brunel used to what we have today</p> <p>-select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities</p> <p>-apply their understanding of how to strengthen, stiffen and reinforce more complex structures, focusing on bridges</p>	<p><b>Topic – Is it me or is it hot in here</b></p>	<p><b>Topic – How steady is your hand?</b></p> <p>-investigate and analyse a range of existing products</p> <p>-evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>-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</p> <p>- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design</p> <p>-understand and use mechanical systems in their products [for example gears, pulleys, cams, levers and linkages]</p> <p>-understand and use</p>

					<p>electrical systems in their products [for example series circuits incorporating switches, bulbs, buzzers and motors] -apply their understanding of computing to programme, monitor and control their products.</p>
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Threshold Concepts	KS1 <span style="display: inline-block; border-bottom: 1px solid black; width: 150px; margin: 0 5px;"></span> LKS2 <span style="display: inline-block; border-bottom: 1px solid black; width: 100px; margin: 0 5px;"></span> UKS2 <b>Examples of Deeper Questioning Starters related to Threshold Concepts</b>		
	<b>Design Skills</b>	What is? What did? Where is?	What is? What did? Where is? Which is? Which could?
<b>Practical Skills</b>	What is? Which is? Why is?	What is? Which is? Which will? Why is? How could?	What is? Which is? Which will? Why is? How could? How will? How might?
<b>Technical Knowledge</b>	What is? Which is? Why is?	What is? Which is? Which could? Why is? How did?	What is? Which is? Which could? Why is? How did? How could?
<b>Evaluation Skills</b>	What is? Which did? Who did? When did?	What is? Which did? Who did? When did? Why did? Why is?	What is? Which did? Who did? When did? Why did? Why could? Why might? How might?
<b>Cookery and Nutrition</b>	What is? Where did? When did? Why is?	What is? Where did? When did? Why is? Which will?	What is? Where did? When did? Why is? Which will? How did? How will?

## Deeper Questioning Grid

**2<sup>nd</sup>**

	Is? Present	Did? Past	Can? Possibility	Would/ Could? Probability	Will? Prediction	Might? Imagination
<b>1<sup>st</sup></b> <b>What? Event</b>						
<b>Where? Place</b>						
<b>When? Time</b>						
<b>Which? Choice</b>						
<b>Who? Person</b>						
<b>Why? Reason</b>						
<b>How? Meaning</b>						

*Deeper thinking*

- Recall Questioning should always be secure at the earlier levels before moving on to the deeper levels of questioning.
- Whilst the questioning above gives examples of how the questioning can move on through Key Stages, they should not be limited by nor planned for, purely by age and stage.



- Questioning should be matched to the child's ability to demonstrate secure knowledge and understanding in the earlier stages of recall.

### **Threshold Concepts** Ref: Meyer and Land (2006)

- **Transformative** – it changes the way you see the world,
- **Troublesome** – it might seem counterintuitive or alien,
- **Irreversible** – the transformative nature means that once it is learnt it is unlikely to be forgotten,
- **Intergrated** – it reveals connections between the different parts of the discipline,
- **Bounded** – despite this, the concept has defined parameters in which it applies,
- **Discursive** – it leads to the development of new language.

### **The implications of using Threshold Concepts** Ref: Mark Enser 2017 'Teaching it Real'

- Use it to help structure our program of study. Geography is based on the idea of a spiral curriculum. We can make sure that Threshold concepts are taught well and taught early.
- Use it when planning a sequence of learning. Are you introducing these threshold concepts at the start of the topic?
- Plan to test these concepts. We need to make sure that pupils are secure in this threshold knowledge before moving on.
- Close the gaps. If pupils haven't grasped these threshold concepts there is no point in moving on regardless. We need to have work for them to help them fill in these gaps.
- Revisit often. We need to plan to link new information back to these Threshold concepts and show the links between different parts of the discipline. Use "Powerful Geography" to give them the change to apply these parts of the subject.

#### TEACHERS TO ACTION

On the Design and Technology Curriculum Map: As topics are taught – teachers can adjust the National Curriculum Learning Objectives alongside the threshold concepts covered. The recall questions **can** be inserted/ adjusted to ensure our Design and Technology Curriculum Map matches the planning, and that the planning sequence is securing essential concepts (irreversible knowledge).

In Lessons: Teachers must ensure a rich vocabulary is taught and developed throughout the sequencing of teaching. Teachers must ensure that threshold concepts are secure within a level before moving onto a deeper level of questioning/ thinking.