Design and Technology

Potterhanworth Church of England Primary School

OUR CURRICULUM INTENT

To nurture independent, resilient, inquisitive learners, who have a breadth of knowledge, experiences and skills, with aspiration to succeed in the wider world.

The GOLDEN THREADS of our Intent

Oracy	Diversity	Independence

What are the key features of 'knowledge-rich' assessment for DT?

Design Technology

At key stage 1 and 2, the sticky knowledge takes full account of the national curriculum's main characteristics of:

- Designing
- Making
- Evaluating
- Using technical knowledge
- Food technology

There are relatively few assessment statements as the knowledge statements should be what pupils retain for ever. In other words, this knowledge is within their long-term memory and will be retained.

When considering pupils' improvement in subject specific vocabulary, provide pupils with a vocabulary mat which contains all words used for design technology for their age group.

EYFS

Expressive Arts and Design (NC):

The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe

ELG: Creating with Materials Children at the expected level of development will:

Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function	Share their creations, explaining the process they have used;	Make use of props and materials when role playing characters in narratives and stories.

To know how to find/make props.
To know how to join different materials
To know different textures.

To make simple models which express their ideas.
To explore different materials freely.
To develop their ideas about how to use them and what to make.
Create closed shapes with continuous lines and begin to use these shapes to represent objects.

Possible Stations: Tinkering Tables, Junk Modelling, Creation Stations.

Substantive and Disciplinary Knowledge

Designing NC Objectives:	Y1	Y2	Y3	Y4	Y5	Y6
	Design -purposeful, functional, appealing products for themselves and other users based on design criteria *Design -generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*		*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*			
Substantive and Disciplinary Knowledge	**Know what an idea is.** **Know what the word product means.** **Know what a plan is**. Use their own ideas to design something Describe how their own idea works. Design a product which moves. Explain to someone else how they want to make their product. Make a simple plan before making.	**Know how to develop a plan.** **Know what a textile is.** **Know the features of different textiles.** Think of an idea based on a set of design criteria. Make a more detailed plan before making. Make a 'mock-up' / template of their plan before making. Explain why they have chosen specific textiles.	**Know what criteria means.** Produce a clear plan Prove that a design meets a set criteria Design a product and make sure that it looks attractive. Choose a material for both its suitability and its appearance. Persevere and adapt work when original ideas do not work	**Know what 'fit for purpose' means.** **Know how to create a set of criteria.** Produce a clear plan and explain it Prove that a product design is fit for purpose. Explain how a product design is fit for purpose. Develop their own design criteria and use these to inform their ideas	**Know how to use ICT to research a given product.** Come up with a range of ideas after collecting information from different sources (including web-based resources) Produce a detailed, step-by-step plan Explain how a product will appeal to a specific audience	**Know what market research is and how to use it to inform planning.** Use market research to inform plans and ideas. (e.g. surveys, interviews, questionnaires) Develop a design specification to guide their thinking. Follow and refine original plans. Justify planning in a convincing way
			Know how to draw or sketch an idea. **Know what an annotation is.** **now why annotations are used within the design process.** Communicate ideas in a range of ways, including by sketches and drawings which are annotated **Know the purpose of research.** **Know how to gather information from groups of individuals.** Gather information about the needs and wants of particular individuals and groups. Following research, develop their own design criteria and use these to inform their ideas.		**Know what a pulley is and what is does.** **Know what a gear is and what it does.** Design a product that requires pulleys or gears. **Know different ways to represent a design.** Use prototypes, cross-sectional drawings, exploded diagrams and IT software to represent designs. **Know how to identify the needs, wants and preferences of particular individuals and groups.** Show, that culture and society is considered in plans and designs (verbally or written means).	

Making NC Objectives:	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
	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.		*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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.*			
Substantive and Disciplinary Knowledge	**Know how to handle tools safely.** **Know what is meant by material.** **Know that materials are chosen for a task, according to their characteristics.** Use own ideas to make something. Make a product which moves. Choose appropriate resources and tools for the task.	**Know how to handle tools safely.** **Know which tools can be used on different materials.** **Know how materials can be joined.** **Know what is meant by model and structure.** Choose tools and materials and explain why they have chosen them. Choose tools and materials and explain why they have chosen them Measure materials to use in a model or structure Join materials and components in different ways	**Know which tools can be used for a particular task.** **Know (through showing), how to handle the tool.** **Know which material is likely to give the best outcome.** Follow a step-by-step plan Select the most appropriate tools for a given task. Use the most appropriate techniques for a given task Measure, mark out, cut and shape materials and components. Assemble, join and combine materials and components. Apply finishing techniques	**Know why tools can be used for different tasks.** **Know why which material will give the best outcome.** **Know about and how to create different finishing techniques.** Order the main stages of making. Measure, mark out, cut and shape materials and components with some accuracy. Assemble, join and combine materials and components with some accuracy. Apply finishing techniques with some accuracy.	**Know which tool to use for a specific practical task.** **Know what a prototype is and how to develop one.** Make a prototype before making a final version. Produce lists of tools, equipment and materials needed. Explain why a specific tool is best for an action. Measure, mark, cut shape materials and components with increasing accuracy. Assemble, join and combine materials and components with increasing accuracy. Apply a range of finishing techniques, with increasing accuracy.	**Know the different actions a tool can perform.** **Know how to use any tool correctly and safely.** Formulate step-by-step plans as a guide to making. Use a range of tools and equipment competently. Accurately measure, mark out, cut and shape materials and components. Accurately assemble, join and combine materials and components. Accurately apply a range of finishing techniques, including those from art and design.
			Know what is meant by component. Know how relevant electrical and mechanical components work. **Know the purpose of relevant electrical and mechanical components.** Make a product which uses both electrical and mechanical components		**Know how pulleys and gears work.** **Know how pulleys and gears can be used within products.** Make a product that relies on pulleys or gears	

Evaluating NC Objectives	Y1	Y2	Y3	Y4	Y5	Y6
	Evaluate their ideas and products against design criteria		*Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Understand how key events and individuals in design and technology have helped shape the world*			
Knowledge and skills	**Know how to investigate how something works. E.g. use of tinkering, looking at the layers of equipment.** **Know where products might be used.** Describe how something works. Talk about their design ideas and what they are making Explain what works well and not so well in the model they have made.	**Know how to analyse their own work.** **Know what products are used for.** **Know what 'design criteria' is.** Explain what went well with their work. Suggest how their products could be improved Make simple judgements about their products and ideas against design criteria	**Know what makes a model successful.** **Know reasons why a model might be or not be successful.** **Know what is meant by 'evaluating'** Identify strengths and weaknesses of their design ideas. Offer suggestions about how to improve a finished model. Explain what makes a successful model. Refer to their design criteria when evaluating.	**Know different ways to present products to an audience.** **Know how to test a design to check it has met specific criteria.** Present a product in an interesting way. Use their design criteria to evaluate their completed products	**Know how to test and evaluate designed products.** Evaluate appearance and function against original criteria. Evaluate a partner's designs, with positive features. Suggest alternative plans; outlining the positive features.	**Know how to test and evaluate designed products against clear criteria.** Critically evaluate the quality of their design against original criteria (appearance and fitness for purpose). Evaluate a partner's designs, with positive features and draw backs. Suggest alternative plans; outlining the positive features and draw backs.
			Know how to investigate existing products to answer questions such as: **-who designed and made the products** **-where products were designed and made** **-when products were designed and made** Explain the purpose of a product. Evaluate products for both their purpose and appearance. Evaluate and suggest improvements for design.		**Know about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products** Investigate and analyse existing products: -how much products cost to make -how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose	

<table>
<tr><th>Technical Knowledge NC Objectives</th><th>Y1</th><th>Y2</th><th>Y3</th><th>Y4</th><th>Y5</th><th>Y6</th></tr>
<tr><td></td><td colspan="2">Build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</td><td colspan="4">Apply their understanding of how to strengthen, stiffen and reinforce more complex structures understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] apply their understanding of computing to program, monitor and control their products.</td></tr>
<tr><td rowspan="5">Substantive and Disciplinary Knowledge</td><td colspan="2">Know how freestanding structures can be made stronger, stiffer and more stable.</td><td colspan="2">Know how to use simple ICT programmes when designing.</td><td colspan="2">Know how to use more complex IT programmes.</td></tr>
<tr><td>Make a structure stronger.

Make a structure stiffer.

Make their own model stronger and stiffer.</td><td>Make a structure stable.

Make their own model stronger and more stable.

Explain / show why a structure needs a base.</td><td>Use a simple ICT program within the design. e.g. for typing, presentation, photography, 3D modelling.</td><td>Use ICT, to add to the quality of the product.</td><td>Use more complex ICT programmes to help enhance the quality of the product produced.</td><td>Use an ICT program to control their products.

Explain which ICT product would further enhance a specific product.</td></tr>
<tr><td colspan="2">Know food ingredients should be combined according to their sensory characteristics.
Give examples of ingredients that go well together.
Give examples of ingredients that do not go well together.</td><td colspan="2">Know that food ingredients can be fresh, pre-cooked and processed.
Explain the difference between fresh, pre-cooked and processed foods.
Describe the benefits of using fresh, pre-cooked and processed foods</td><td colspan="2">Know how to adapt and refine recipes.
Adapt recipes by adding or substituting one or more ingredients.</td></tr>
<tr><td colspan="2" rowspan="2">Know about the simple working characteristics of materials and components.
Know about the movement of simple mechanisms such as levers, sliders, wheels and axles.
Know that a 3-D textiles product can be assembled from two identical fabric shapes
Know the correct technical vocabulary for the projects they are undertaking

Use the correct terminology for components and materials being used.
Use wheels and axles in models, when appropriate to do so.</td><td colspan="4">Know how to use learning from science to help design and make products that work
Know how to use learning from mathematics to help design and make products that work
Know about the functional properties and aesthetic qualities that materials have.
Know that materials can be combined and mixed to create more useful characteristics
Know that mechanical and electrical systems have an input, process and output.
Know the correct technical vocabulary for the projects they are undertaking.</td></tr>
<tr><td colspan="2">Use simple electrical circuits and components to create functional products.
Use electrical systems to enhance the quality of the product.
Make links with scientific knowledge by using lights, switches or buzzers.

Strengthen a product by stiffening a given part or reinforcing a part of the structure.
Score and cut with increasing care to create structure, gluing products accurately and precisely.
Make strong, stiff shell structures
Make a single fabric shape into a 3D textiles product</td><td colspan="2">Make links with scientific knowledge to design by using pulleys or gears.
Use mechanical systems such as levers and linkages or pneumatic systems to create movement.
Use electrical systems correctly and accurately to enhance a given product.

Score and cut accurately to create triangulation for structure, gluing products precisely.
Reinforce and strengthen a 3D framework.
Create a 3D textile product, made from a combination of fabric shapes.
Use knowledge to improve a made product by strengthening, stiffening or reinforcing.</td></tr>
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Food Technology NC Objectives	Y1	Y2	Y3	Y4	Y5	Y6
	Use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from		*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 variety of ingredients are grown, reared, caught and processed*			
Substantive and Disciplinary Knowledge	**Know that everyone should eat at least five portions of fruit and vegetables every day.** **Know that all food comes from plants or animals** **Know that food has to be farmed, grown elsewhere (e.g. home) or caught.** Give examples of fruits and vegetables. Explain (verbally or through pictures) where food comes from.	**Know how to use and read simple scales.** **Know about the different categories of food.** Weigh ingredients to use in a recipe. Describe the ingredients used when making a dish or cake. Name and sort foods into the five groups in The Eatwell Plate	**Know how to read and follow a recipe.** **Know different ways to combine ingredients.** **Know how to use digital and analogue scales.** **Know the difference between healthy and unhealthy foods.** Describe (and show) how food ingredients come together. Weigh out ingredients and follow a given recipe to create a dish. Talk about which food is healthy and which food is not. Know when food is ready for harvesting.	**Know what a balanced diet 'looks' like.** **Know how to read and digital and analogue scales accurately.** Explain that healthy diet is made up from a variety and balance of different food and drink, as depicted in The Eatwell Plate. Shown an understanding of: that to be active and healthy, food and drink are needed to provide energy for the body Identify when food is ready for harvesting based on properties.	**Know that seasons may affect the food available.** **Know how different foods should be stored.** Follow a recipe accurately for a basic meal. Explain where products should be stored. Show an understanding that different food and drink contain different substances – nutrients, water and fibre – that are needed for health. Explain in which season various foods are available for harvesting.	**Know how foods react when stored in correct and incorrect ways.** **Know how find out the cost of ingredients.** Explain how food ingredients should be stored and give reasons. Work within a budget to create a meal. Explain knowledge of different foods and drinks containing different substances – nutrients, water and fibre – that are needed for health.
	Know how to use techniques safely: cutting (bridge, claw) grating, peeling. Cut and prepare food safely. Prepare simple dishes safely and hygienically, without using a heat source.		**Know how to be both hygienic and safe when using food.** **Know how to keep themselves and others safe when using sharp equipment.** **Know that that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world.** Over time, bring a creative element to the food product being designed. Show an understanding of how food is grown.		**Know how to be both hygienic and safe in the kitchen, with confidence.** **Know how to prepare a basic meal by collecting the ingredients in the first place.** **Know how food is processed into ingredients that can be eaten or used in cooking.** **Know how recipes can be adapted to suit different senses.** Create recipes by adapting appearance, taste, texture and aroma.	
			Know the difference between a savoury and sweet dish. **Know how to safely use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking.** Prepare and cook a variety of predominantly savoury dishes safely and hygienically including - where appropriate, with the use of a heat source. Cut, peel, shop, slice, grate, mix, spread, knead, bake safely.			