



Design and technology at HPF

Overview

'Celebrating and inspiring a lifelong love of learning in an ever changing world'

Rationale

Design and technology at HPF contributes to our Federation vision and values. Our Design and technology curriculum provides a wide range of multi-sensory experiences, which engage, motivate and **INSPIRE** deep learning and inspiration for **LIFE-LONG LEARNING**. At the core of our Design and technology provision is the National Curriculum and a corresponding progression of key skills and knowledge. This helps us to ensure that our children receive a progressively challenging and engaging education that resonates with the Hanham Primary Federation community.

Using creativity and imagination, our children will design and make products that solve and contribute to real and relevant problems within a variety of contexts, **RESPECTING** their own and others' needs, wants and values. Our curriculum aims to develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological, **EVER CHANGING WORLD**.

Our children should build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users applicable to an array of contexts.

Our Design and technology curriculum encourages children to **CELEBRATE**, critique, evaluate and test their ideas and products and the work of others. This will correspond to a progression through the HPF, as the focus on design, construction and evaluation increases in detail and specificity in conjunction with technical knowledge.

The HPF Design & Technology curriculum also encourages children to understand and apply the principles of nutrition and learn how to cook, using a variety of techniques. They create products and meals to be **ENJOYED** and **CELEBRATE** the achievements of themselves and their peers whilst engaging in **RESPECTFUL**, critical review.



**HANHAM PRIMARY
FEDERATION**
CELEBRATING - INSPIRING - LEARNING



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CELEBRATING – INSPIRING – LEARNING

Children are taught and expected to celebrate the work of others in order to improve their designs.

Children are exposed to a range of existing design styles for inspiration and are given the freedom to fully explore their own creative ideas.

Practical activities enable children to learn from doing and modify their designs.

Perseverance

The design process can be frustrating as designs may need lots of adaptation. Children are taught to refine and modify their designs, learning from both what works and what does not. This mind-set is a crucial skill designers, chefs and engineers possess.

Respect

Learners are expected to value and respect the designs and work of others. They are taught the skills of giving precise, constructive feedback to help their peers improve their designs without discouragement. This is a reciprocal process.

Responsibility

During the cookery portion of the D&T curriculum, children learn about balanced diets and our responsibility to eat healthily. More generally, learners are encouraged to take responsibility for their projects, ensuring each stage is completed to a deadline.

Enjoyment

Design and Technology units are planned with pupil engagement at their core; learners are provided with projects that appeal to their interests. Children enjoy the subject and are keen to display their work and share their finished products with the wider school community.

Independence

Learners discuss the work of others and form opinions as to why certain designs are successful. However, they are given, through the subtle guidance of the teacher, freedom and autonomy to explore their own ideas and design choices.

Children will learn to:

Design: children will design purposeful, functional, appealing products for themselves and other users based on design criteria. They will generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

Make: children will select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately. They will 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.

Evaluate: children will investigate and analyse a range of existing products. They will evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. Children will understand how key events and individuals in design and technology have helped shape the world.

Technical Knowledge: Children will apply their understanding of how to strengthen, stiffen and reinforce structures that are more complex. They will understand and use mechanical systems in their products [for example, leavers, sliders, wheels, axles, gears, pulleys, cams and linkages]. Children will understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]. They will apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition: Children will use, understand and apply principles of a healthy and varied diet to prepare dishes. They will understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

What does this look like in EYFS?

We recognise that children naturally explore the concepts, which underpin Design and technology from a young age. The outcomes are taken from the 'Expressive Arts and Design' strand of the EYFS profile which specifically involves 'Being imaginative' and 'Exploring and using media and materials'. The aims involve children being able to safely self-select, use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. They should be able to use what they have learnt about media and materials in original ways, thinking about uses and purposes. This could be as simple as manipulating playdough, to designing and constructing their own houses using a variety of materials, when learning about The Three Little Pigs. The skills and the vocabulary that the children develop will support their understanding as they enter the national curriculum.

What does this look like in Key Stage 1?

In Key Stage 1, children will build on the experiences that they have had in the EYFS. Through a variety of creative and practical activities, our learners will gain knowledge, understanding and skills needed to engage in an iterative process of designing and making. As well as this, children are taught how to cook and apply the principles of nutrition and healthy eating. They will explore using these skills in a range of environments [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

They are taught to design, make and evaluate, whilst using technical knowledge. More specifically, during the Great Fire of London topic, children will draw their plan, construct using a variety of resources e.g. junk modelling and then create an evaluation either written or verbal of their own fire vehicle. They also use their technical knowledge to explore the use of wheels.

As part of their work with food, children will use the basic principles of a healthy and varied diet to prepare dishes and will understand where food comes from. An example of this involves our children writing a recipe for a fruit salad and then preparing, making and tasting this.

What does this look like in Key Stage 2?

In Key Stage 2, learners will continue to develop on previous learning experiences from Key Stage 1. Through a variety of creative and practical activities, our children are taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

Children will encounter and apply the design, make and evaluate principles of design and technology whilst using technical language through a variety of relevant and applicable contexts. As we progress from Key Stage 1, there is a more explicit acknowledgement when understanding how to design, make and evaluate. For example, in Year 6, children are expected to create detailed and scrutinised plans when building Viking long boats thinking holistically about practicality, aesthetics and application. Using technical knowledge, designs can be adapted before the making and construction process while using a variety of materials. Learners will then critically evaluate their designs; thinking about what went well, difficulties and improvements for future constructions.

Through cooking and nutrition, pupils are taught how to cook and apply the principles of nutrition and healthy eating. We aim to instil a love of cooking in pupils and open a door into one of the great expressions of human creativity. We believe that learning how to cook is a crucial life skill that enables children to feed themselves and others offering a valuable skill that can be adapted multi-culturally and long-term.

Curriculum Strands

Design and Technology Curriculum Overview

Early Years Framework	<ul style="list-style-type: none"> In Reception, children are given daily opportunities to experiment with creating different textures by selecting, manipulating and combining different media that are readily available to them in order to achieve a planned effect. An example of this would be using tissue paper and cotton wool in Term 4 to create a beanstalk from the story Jack and the Beanstalk, or by printing leaves into playdough when learning about Autumn in Term 1. As part of our weekly continuous provision, children are encouraged to construct with a purpose in mind, using a variety of resources. For example, when learning about Chinese New Year in Term 3, we learn about the Great Wall of China and use Duplo, wooden blocks and junk modelling to create our own bridges. We discuss how best to make a bridge and talk about the importance of it being 'sturdy'. Whilst doing such activities, children are taught to use simple tools and techniques competently and appropriately. They use tools and techniques to shape, assemble and join materials they are using. A specific example of this is during Term 2 when children design their own rockets for Bonfire Night. They use scissors, glue, string, tape etc. to join cardboard or paper. By giving children such resources and opportunities, they are able to create simple representations of events, people and objects that represents their own ideas and their understandings of topics. Children begin to learn about cooking and nutrition in Reception. In Term 1 we make porridge whilst learning about the story of Goldilocks and the Three Bears. In Term 2, we make Gingerbread Men and during Term 5 we bake our own bread, when learning about the story of The Little Red Hen. The children are involved in the preparation and actual making of all of these foods. In addition to this, during Term 4, we have a topic on Healthy Eating. We adapt our role-play areas into a Healthy Café where children create healthy meals for one another. We have review times during the day where children have the opportunity to discuss the process they went through when designing and making something. From this, they can adapt their work where necessary. Pupils' articulation during these opportunities allows for holistic assessment of the individual child by the class teacher. 				
National Curriculum	Design	Make	Evaluate	Technical Knowledge	Cooking and Nutrition
Year 1	<ul style="list-style-type: none"> Think of ideas of their own when designing a Christmas decoration. Explain how they want to make their design. Use pictures and words to plan when designing their fruit salad. 	<ul style="list-style-type: none"> Cut materials using scissors when making. Make a Christmas decoration using different materials. Describe the materials using with different words when making split pin 	<ul style="list-style-type: none"> Say why they have chosen moving parts on their split pin polar bear. Talk about their own fire vehicles. After making a product think about what went well, what was challenging 	<ul style="list-style-type: none"> Describe how something works. Have an understanding of products that move (e.g. split pin polar bear). 	<ul style="list-style-type: none"> Cut food safely when preparing a fruit salad. Describe the texture of the fruits when making a fruit salad.

	<ul style="list-style-type: none"> Gather and sort the materials they will need when preparing to make their fire vehicle and paper plate snake. Talk with others about how they want to construct their product (homes for their pets). Make plans of their fruit salad, Christmas decoration, polar explorer tent before making these (e.g. drawings, arranging pieces of construction before building). 	<p>polar bear and Christmas decoration.</p> <ul style="list-style-type: none"> Explain what they are making. Explore and describe how textiles feel when making their polar explorer tent. Make a product from textile by gluing (e.g. fire vehicle) Explain what they are making and which tools are they using. Make their work tidy. 	<p>and what they would do to improve it.</p> <ul style="list-style-type: none"> Discuss things that other people have made. 		<ul style="list-style-type: none"> Wash their hands and make sure that surfaces are clean.
Year 2	<ul style="list-style-type: none"> Choose the best tools and materials when making sushi. Choose the best tools and materials when making superhero capes. Think of superhero cape ideas and plan what to do next. Make sensible choices as to which material to use for their constructions e.g. superhero capes. Develop their own ideas from initial starting points when designing a pirate ship. Add some kind of design to their product. 	<ul style="list-style-type: none"> Cut textiles when creating their superhero cape. Join things (materials/ components) together in different ways. Join textiles together to make something when making their superhero cape. Measure materials to use in a model or structure when making their superhero cape. 	<ul style="list-style-type: none"> Describe their superhero cape design by using pictures, diagrams, models and words. Explain why they chose a certain textile after making their superhero cape. Describe what went well after making sushi. Describe what they would want to improve if they made sushi again. Consider how to improve their construction of a pirate ship. 	<ul style="list-style-type: none"> Use joining, folding or rolling to make their pirate ship stronger. Join materials together as part of a moving product. Incorporate some type of movement into models. 	<ul style="list-style-type: none"> Describe the properties of the ingredients they are using when making sushi. Explain what it means to be hygienic. Describe how they are hygienic in the kitchen.
	<ul style="list-style-type: none"> Describe their design using an accurately labelled sketch and words when designing toys. 	<ul style="list-style-type: none"> Use a range of techniques to shape and mould: clay work Use finishing techniques 	<ul style="list-style-type: none"> Evaluate and improve designs of toys. 	<ul style="list-style-type: none"> Describe their design using an accurately labelled sketch and words when designing toys. 	<ul style="list-style-type: none"> Prepare and cook a variety of predominantly savoury dishes

<p>Year 3</p>	<ul style="list-style-type: none"> Put together a step-by-step plan which shows the order and also what equipment and tools they need in order to make different toys. 	<p>e.g. glaze</p> <ul style="list-style-type: none"> Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Make food for a Great Dragon Bake off Party Use equipment and tools accurately when making toys. 			<p>using a range of cooking techniques e.g. plant based recipes</p> <ul style="list-style-type: none"> 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 when making food for a Great Dragon Bake off Party
<p>Year 4</p>	<ul style="list-style-type: none"> Come up with at least one idea about how to create their Roman aqueduct. Take account of the ideas of others when designing (aqueducts, bridges, towers) Produce a plan and explain it to others for products (including cooking methods). 	<ul style="list-style-type: none"> Know what to do to be hygienic and safe when making Roman Biscuits. Attempt to make their products (Roman infrastructure) strong 	<ul style="list-style-type: none"> Suggest some improvements and say what was good and not so good about their original design or product (aqueducts, bridges, towers). Undertake evaluation of past and present design and technology when researching Roman constructions. Check designs of aqueducts are successful by testing them. Explain how to improve original designs of bridges, towers and aqueducts. 	<ul style="list-style-type: none"> Present their product in an interesting way and describe features. Produce a plan and explain it to others for products (including cooking methods). Develop a critical understanding of the impact on daily life and the wider world from Roman constructions and infrastructure. 	<ul style="list-style-type: none"> Know what to do to be hygienic and safe when making Roman Biscuits. Produce a plan and explain it to others for products (including cooking methods).

			<ul style="list-style-type: none"> Evaluate Roman constructions, thinking of both appearance and the way it works 		
<p>Year 5</p>	<ul style="list-style-type: none"> Use research and criteria to develop products that are fit for purpose and aimed at specific groups when making biscuits. Come up with a range of ideas after they have collected information in preparation for making biscuits. Consider a user's view when designing packaging for biscuits. Produce a detailed step-by-step plan for making biscuits and packaging. Suggest some alternative plans and say what the good points and drawbacks are about each in the construction of packaging and baking of biscuits. 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 when planning flying machines. Generate, develop, model and communicate their ideas through discussion, 	<ul style="list-style-type: none"> Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design in the construction of flying machines. Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately in the construction of flying machines. Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic in the construction of flying machines 	<ul style="list-style-type: none"> Suggest some alternative plans and say what the good points and drawbacks are about each in the construction of packaging and baking of biscuits. Analyse and evaluate existing products (biscuits and packaging) and improve own work. Evaluate their ideas and products against their own design criteria and consider the views of others to improve their flying machines. 	<ul style="list-style-type: none"> Produce a detailed step-by-step plan for making biscuits and packaging. Present their biscuit and packaging well. 	<ul style="list-style-type: none"> Describe what they do to be both hygienic and safe Prepare and cook a variety of predominantly savoury dishes (cheese scones and mince pies) using a range of cooking techniques

	<p>annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design in the construction of flying machines.</p>				
<p>Year 6</p>	<ul style="list-style-type: none"> • Use a range of information to inform their designs (Viking long boat, lamp and ski lift). • Justify their plans of products (Viking long boat, lamp and ski lift). 	<ul style="list-style-type: none"> • Work within constraints when making their products including a Viking long boat, lamp and ski lift for the Alps. • Follow and refine their plans if necessary e.g. Viking long boat and lamp plan. 	<ul style="list-style-type: none"> • Test and evaluate their final product. • Is their product fit for purpose e.g. Viking long boat. • Explain how they can improve their product. • Explain what different resources have improved each of their products. • Explain what if they need more or different information to make their Viking long boat even better. • Justify why they selected specific materials when making their Viking long boat. 	<ul style="list-style-type: none"> • Use different kinds of circuit in their lamp product. • Think of ways in which adding a circuit would improve their lamp. 	<ul style="list-style-type: none"> • Prepare and cook a variety of predominantly savoury dishes (fajitas) using a range of cooking techniques.