

Design and Technology – Skills progression (reviewed 2023 – focus now on annual plan)

Design and technology is an inspiring, rigorous and practical subject that is an important part of the curriculum at Eyam Primary School. By using creativity and imagination, children will be able to design and make products that solve real and relevant problems within a variety of contexts, considering their own needs, wants and values as well as those of others. They will acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Children will learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. Children understand that a wide range of careers in design and technology may be open to them and that high-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation. Children will learn the skills that relate to design and technology through a progressive programme linked to whole school topics that are delivered to them from EYFS to Year 6.

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- 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
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

EYFS

Children learn to:

- Children recognise that a range of technology is used in places such as homes and schools
- They select and use technology for particular purposes
- Children know about similarities and differences in relation to objects and materials
- Explain what they are making and which materials they are using
- Select materials from a limited range that will meet simple design criteria e.g. shiny or smooth
- Explore ideas by rearranging materials

Children will:

- Explore products to find out what they are made of, how they are made, what they are used for etc. Explore familiar objects - draw them, take them apart, put them back together, taste foods etc
- Use a range of objects and materials to explore and use independently and with support including food ingredients
- Compare products - talk about what they are like - what is the same, what is different. Use a range of products in home corner and around the classroom; explore food ingredients
- Use construction kits, junk modelling, den building, etc. skills include : cutting, shaping, assembling, joining, combining, moulding, preparing and combining food ingredients in a range of food products, Hold scissors correctly and cut effectively, Use glue effectively, both wet and dry glue, Join materials using different methods: glue, sticky tape, masking tape, staples, paperclips, threading (thick needle and thread)
- Explore products and say what they are made of - being able to name materials used, say how they might be used etc. look at familiar and some unfamiliar products
- Make simple evaluation of what they have made - what do they like, what don't they like about it. Would it work, could it do the job it has been made for?

	<ul style="list-style-type: none"> Select and name the tools needed to work the materials e.g. scissors for paper Describe simple models or drawings of ideas and intentions Discuss their work as it progresses 	<ul style="list-style-type: none"> Have opportunities to explore products, discuss them and use them etc. Existing products, products ch have made, products other ch have made Have a selection of tools and materials for ch to explore and use freely and in supported work. Ch to be coached in use of tools and materials, Stir and mix substances, Use rolling pins effectively and with control, use templates to draw around and cut out, use a ruler for drawing lines, fold paper and make a crease, Use tools in a safe way - scissors, woodwork tools Think about what they are going to make, how they will make it and how it will be used - using construction kits, junk modelling etc. Talk about or draw what they have done
	KS1	KS2
Understanding contexts, users and purposes	<p>Children learn to:</p> <ul style="list-style-type: none"> work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment state what products they are designing and making say whether their products are for themselves or other users describe what their products are for say how their products will work say how they will make their products suitable for their intended users use simple design criteria to help develop their ideas 	<p>Children learn to:</p> <ul style="list-style-type: none"> work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment describe the purpose of their products indicate the design features of their products that will appeal to intended users explain how particular parts of their products work <p>Lower KS2:</p> <ul style="list-style-type: none"> gather information about the needs and wants of particular individuals and groups develop their own design criteria and use these to inform their ideas <p>Upper KS2:</p> <ul style="list-style-type: none"> carry out research, using surveys, interviews, questionnaires and web-based resources identify the needs, wants, preferences and values of particular individuals and groups develop a simple design specification to guide their thinking
Designing:		
<ul style="list-style-type: none"> 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 		
Generating, developing, modelling and communicating ideas	<p>Children learn to:</p> <ul style="list-style-type: none"> generate ideas by drawing on their own experiences use knowledge of existing products to help come up with ideas develop and communicate ideas by talking and drawing 	<p>Children learn to:</p> <ul style="list-style-type: none"> share and clarify ideas through discussion model their ideas using prototypes and pattern pieces use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas use computer-aided design to develop and communicate their ideas <p>Lower KS2:</p> <ul style="list-style-type: none"> generate realistic ideas, focusing on the needs of the user make design decisions that take account of the availability of resources

	<ul style="list-style-type: none"> • model ideas by exploring materials, components and construction kits and by making templates and mock-ups • use information and communication technology, where appropriate, to develop and communicate their ideas 	<p>Upper KS2:</p> <ul style="list-style-type: none"> • generate innovative ideas, drawing on research • make design decisions, taking account of constraints such as time, resources and cost
<p>Making:</p> <ul style="list-style-type: none"> • 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>Planning for making</p>	<p>Children learn to:</p> <ul style="list-style-type: none"> • plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics 	<p>Children learn to:</p> <ul style="list-style-type: none"> • select tools and equipment suitable for the task • explain their choice of tools and equipment in relation to the skills and techniques they will be using • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities <p>Lower KS2:</p> <ul style="list-style-type: none"> • order the main stages of making <p>Upper KS2:</p> <ul style="list-style-type: none"> • produce appropriate lists of tools, equipment and materials that they need • formulate step-by-step plans as a guide to making
<p>Practical skills and techniques</p>	<p>Children learn to:</p> <ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design 	<p>Children learn to:</p> <ul style="list-style-type: none"> • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components <p>Lower KS2:</p> <ul style="list-style-type: none"> • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy <p>Upper KS2:</p> <ul style="list-style-type: none"> • 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 • use techniques that involve a number of steps • demonstrate resourcefulness when tackling practical problems

Evaluating: <ul style="list-style-type: none"> • explore and evaluate a range of existing products • evaluate their ideas and products against design criteria (at the start, during and at the end of a project) 		
Evaluating own ideas and products	Children learn to <ul style="list-style-type: none"> • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • suggest how their products could be improved 	Children learn to: <ul style="list-style-type: none"> • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work Lower KS2: <ul style="list-style-type: none"> • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products Upper KS2: <ul style="list-style-type: none"> • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • evaluate their ideas and products against their original design specification
Evaluating existing products	Children explore: <ul style="list-style-type: none"> • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products 	Children investigate and analyse: <ul style="list-style-type: none"> • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants Lower KS2 pupils should also investigate and analyse: <ul style="list-style-type: none"> • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused Upper KS2 pupils should also investigate and analyse: <ul style="list-style-type: none"> • 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
Key events and individuals	Children may learn: <ul style="list-style-type: none"> • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products 	Children learn: <ul style="list-style-type: none"> • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

Technical knowledge

- 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

Making products work	Children learn: <ul style="list-style-type: none">• about the simple working characteristics of materials and components• about the movement of simple mechanisms such as levers, sliders, wheels and axles• how freestanding structures can be made stronger, stiffer and more stable• that a 3-D textiles product can be assembled from two identical fabric shapes• that food ingredients should be combined according to their sensory characteristics• the correct technical vocabulary for the projects they are undertaking	Children learn: <ul style="list-style-type: none">• how to use learning from science to help design and make products that work• how to use learning from mathematics to help design and make products that work• that materials have both functional properties and aesthetic qualities• that materials can be combined and mixed to create more useful characteristics• that mechanical and electrical systems have an input, process and output• the correct technical vocabulary for the projects they are undertaking Lower KS2: <ul style="list-style-type: none">• how mechanical systems such as levers and linkages or pneumatic systems create movement• how simple electrical circuits and components can be used to create functional products• how to program a computer to control their products• how to make strong, stiff shell structures• that a single fabric shape can be used to make a 3D textiles product• that food ingredients can be fresh, pre-cooked and processed Upper KS2: <ul style="list-style-type: none">• how mechanical systems such as cams or pulleys or gears create movement• how more complex electrical circuits and components can be used to create functional products• how to program a computer to monitor changes in the environment and control their products• how to reinforce and strengthen a 3D framework• that a 3D textiles product can be made from a combination of fabric shapes• that a recipe can be adapted by adding or substituting one or more ingredients
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Working with food

Where food comes from	Children learn: <ul style="list-style-type: none">• that all food comes from plants or animals• that food has to be farmed, grown elsewhere (e.g. home) or caught	Children learn: <ul style="list-style-type: none">• 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 Upper KS2: <ul style="list-style-type: none">• that seasons may affect the food available• how food is processed into ingredients that can be eaten or used in cooking
Food preparation, cooking and nutrition	Children learn: <ul style="list-style-type: none">• how to name and sort foods into the five groups in The Eatwell plate• that everyone should eat at least five portions of fruit and vegetables every day	Children learn: <ul style="list-style-type: none">• how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source• how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking Lower KS2:

• how to prepare simple dishes safely and hygienically, without using a heat source
• how to use techniques such as cutting, peeling and grating

• that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the Eatwell Plate
• that to be active and healthy, food and drink are needed to provide energy for the body
Upper KS2:
• that recipes can be adapted to change the appearance, taste, texture and aroma
• that different food and drink contain different substances - nutrients, water and fibre - that