

# Grayswood CE Primary School Skills Progression Map



## Subject: Design and Technology

### Intent

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.

Grayswood CE Primary School deliver a design and technology curriculum which aims to inspire our children to be innovative and creative thinkers who have an appreciation for the product design cycle: ideation, creation and evaluation in order to make purposeful products.

Children's interests are captured through project design briefs, giving them purpose, motivation and meaning for their learning. By providing a supportive and nurturing environment, we want our children to develop the confidence to take risks and achieve their personal best, through drafting design concepts, modelling, and testing and to be reflective learners who can evaluate their work and that of others respectfully. Furthermore, we aim to build an awareness of the impact of design and technology on our lives and encourage children to become resourceful, enterprising citizens who will have the skills to contribute to the design of the future.

The children of Grayswood will have the tools to meet the end of key stage attainment targets in the National curriculum and the aims align with those in the National curriculum.

	EYFS	Key Stage 1		Key Stage 2			
	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Structures</b>							
<b>Design</b>	<p><b>Junk modelling</b> Making verbal plans and material choices.</p> <p>Developing a junk model.</p> <p><b>Boats</b> Designing a junk model boat.</p> <p>Using knowledge from exploration to inform design.</p>	<p><b>Stable structures</b> Thinking about what others might want from a design.</p> <p>Beginning to recognise how products and designs in the world around us solve certain needs.</p> <p>Considering who they are designing for – identifying the user.</p> <p>Stating what they intend to make and why – identifying the purpose.</p> <p>Talking about ideas, with purpose and user in mind.</p> <p>Talking about existing products when generating ideas.</p> <p>Using basic drawing skills to communicate ideas.</p>	<p><b>Baby bear's chair</b> Generating and communicating ideas using sketching and modelling.</p> <p>Learning about different types of structures, found in the natural world and in everyday objects.</p>	<p><b>Constructing a castle</b> Designing a castle with key features to appeal to a specific person/purpose.</p> <p>Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features -materials needed and colours.</p> <p>Designing and/or decorating a castle tower on CAD software.</p>	<p><b>Helmets</b> Creating a simple design criteria that outlines the basic functions of a helmet.</p> <p>Designing a shell structure based on user needs.</p> <p>Developing sketching skills with a focus on clarity and simplicity..</p>		<p><b>Playgrounds</b> Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.</p>
<b>Make</b>	<p><b>Junk modelling</b> Improving fine motor/scissor skills</p>	<p>Choosing between a small number of materials,</p>	<p>Making a structure according to design criteria.</p>	<p>Constructing a range of 3D geometric shapes using nets.</p>	<p>Selecting materials for a specific use.</p>		<p>Building a range of play apparatus structures drawing upon new and prior</p>

	<p>with a variety of materials.</p> <p>Joining materials in a variety of ways (temporary and permanent).</p> <p>Joining different materials together.</p> <p>Describing their junk model, and how they intend to put it together.</p> <p><b>Boats</b> Making a boat that floats and is waterproof, considering material choices</p>	<p>ingredients or components.</p> <p>Explaining their choices based on personal experiences.</p> <p>Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining)</p> <p>Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick).</p> <p>Refining their grip to cut competently and confidently.</p> <p>Cutting straight lines and evenly spaced lines.</p> <p>Beginning to cut large shapes and thicker materials like card..</p>	<p>Creating joints and structures from paper/card and tape.</p> <p>Building a strong and stiff structure by folding paper.</p>	<p>Creating special features for individual designs.</p> <p>Making facades from a range of recycled materials.</p>	<p>Explaining choices with regard to function and form.</p> <p>Choosing shapes to suit the function of a product.</p>		<p>knowledge of structures.</p> <p>Measuring, marking and cutting wood to create a range of structures.</p> <p>Using a range of materials to reinforce and add decoration to structures.</p>
<p><b>Evaluate</b></p>	<p><b>Junk modelling</b> Giving a verbal evaluation of their own and others' junk models with adult support.</p>	<p>Discussing existing products, saying what they like about them.</p> <p>Comparing two products and discuss</p>	<p>Exploring the features of structures.</p> <p>Comparing the stability of different shapes.</p>	<p>Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design.</p>	<p>Evaluating designs by comparing them against design criteria.</p> <p>Considering feedback from peers to</p>		<p>Improving a design plan based on peer evaluation.</p> <p>Testing and adapting a design to improve it as it is developed.</p>

	<p>Checking to see if their model matches their plan.</p> <p>Considering what they would do differently if they were to do it again.</p> <p>Describing their favourite and least favourite part of their model.</p> <p><b>Boats</b> Making predictions about, and evaluating different materials to see if they are waterproof.</p> <p>Making predictions about, and evaluating existing boats to see which floats best.</p> <p>Testing their design and reflecting on what could have been done differently.</p> <p>Investigating the how the shapes and structure of a boat affect the way it moves.</p>	<p>which is better for a specific purpose.</p> <p>Saying what they like about their peers' designs and products.</p> <p>Accepting feedback and understanding it is meant to improve their work.</p>	<p>Testing the strength of own structures.</p> <p>Identifying the weakest part of a structure.</p> <p>Evaluating the strength, stiffness and stability of own structure.</p>	<p>Suggesting points for modification of the individual designs.</p>	<p>suggest improvements.</p> <p>Evaluating how effective the chosen materials were in fulfilling the design brief.</p>		<p>Identifying what makes a successful structure.</p>
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**Mechanisms / mechanical systems**

<b>Design</b>			<p><b>Fairground wheel</b> Conducting simple surveys or discussions to gather</p>		<p><b>Making cars</b> Taking part in structured</p>	<p><b>Gears and pulleys</b> Noticing wider-reaching problems or</p>	
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			<p>opinions on what others need or like in a design.</p> <p>Knowing that a survey is used to find out what people like.</p> <p>Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria.</p> <p>Knowing that a design brief helps to decide what to make.</p> <p>Knowing that design criteria are the steps for making a product successful.</p> <p>Creating ideas with design criteria in mind.</p> <p>Referring to specific parts of existing products when generating ideas.</p> <p>Knowing that the design criteria help when thinking of ideas.</p> <p>Using labels to explain parts of a</p>		<p>brainstorming sessions.</p> <p>Developing drawing and sketching skills with a focus on clarity and simplicity.</p> <p>Beginning to recognise the benefit of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams)</p> <p>Creating prototypes using materials with similar properties to their final design.</p> <p>Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences.</p> <p>Developing designs by adding detail and justifications about materials, tools, methods.</p>	<p>needs in the community.</p> <p>Identifying a wide range of needs and potential barriers through market research.</p> <p>Writing more complex problem statements that consider multiple factors and constraints.</p> <p>Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.</p> <p>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.</p> <p>Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design.</p>	
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			<p>design, label materials, etc.</p> <p>Using labels to explain parts of a design, label materials, etc.</p> <p>Knowing that drawings can help explain how something works.</p> <p>Knowing that a label explains part of a drawing.</p> <p><b>Making a moving monster</b></p> <p>Creating a class design criteria for a moving monster.</p> <p>Designing a moving monster for a specific audience in accordance with a design criteria.</p>			Using a series of prototypes to refine and improve their designs.	
<b>Make</b>			<p><b>Fairground wheel</b></p> <p>Choosing materials, ingredients or components from a wider range of materials, ingredients or components.</p> <p>Explaining their choices based on the properties of</p>		<p>Following detailed safety instructions.</p> <p>Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects.</p>	<p>Consistently apply safety instructions.</p> <p>Select appropriate scissors to handle delicate cutting tasks and challenging materials.</p> <p>Cutting patterns and drawings accurately.</p>	

			<p>materials and components.</p> <p>Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc.</p> <p>Following and recalling simple safety instructions.</p> <p>Knowing that some tools are sharp like scissors and knives.</p> <p>Choosing known geometric shapes when making.</p> <p>Beginning to shape objects to improve how they work.</p> <p>Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere.</p> <p>Considering balance in their finishing, like evenly spaced decoration.</p> <p><b>Making a moving monster</b> Making linkages using card for levers</p>		<p>Handle different sizes and types of scissors with confidence.</p> <p>With close supervision using a hot glue gun to join wooden materials (e.g. lolly sticks).</p> <p>Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage.</p> <p>Selecting materials, components or ingredients from a wider choice but within a limited design space (e.g. seasonal ingredients from May and June in the UK).</p>	<p>In supervised groups, using hot glue guns safely.</p> <p>Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.</p> <p>Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects.</p>	
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			<p>and split pins for pivots.</p> <p>Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.</p> <p>Cutting and assembling components neatly.</p>				
<b>Evaluate</b>	Investigating the how the shapes and structure of a boat affect the way it moves.		<p><b>Fairground wheel</b></p> <p>Discussing a range of existing products and saying what they like and dislike about them.</p> <p>Evaluating existing products against design criteria.</p> <p>Evaluating their ideas and creations against simple design criteria.</p> <p>Knowing that design criteria help to decide if their product is a success.</p> <p>Suggesting improvements to their peers' designs and products.</p> <p>Knowing that improve means to</p>		<p>Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements.</p> <p>Reflecting on feedback to decide if and how it could be used to improve future iterations.</p> <p>Investigating and analysing a range of existing products by looking at their functionality and appeal.</p> <p>Analysing why specific products, designers or inventors are successful.</p> <p>Evaluating their designs by comparing them against design</p>	<p>Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects.</p> <p>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.</p> <p>Considering alternative materials, tools or techniques that could enhance the product.</p> <p>Providing feedback that is helpful,</p>	

			<p>make something better.</p> <p>Knowing that their suggestions can improve someone else's work.</p> <p><b>Making a moving monster</b></p> <p>Evaluating own designs against design criteria.</p> <p>Using peer feedback to modify a final design.</p>		<p>criteria and considering feedback from peers to suggest improvements.</p> <p>Evaluating how effective their chosen materials and tools were in fulfilling the design brief.</p>	<p>specific, and encouraging.</p> <p>Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had.</p>	
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Electrical systems (KS2 only)

<b>Design</b>					<p><b>Torches</b></p> <p>Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</p>	<p><b>Wobble bots</b></p> <p>Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost.</p> <p>Developing more independence in generating ideas.</p> <p>Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality.</p>	
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						Using a series of prototypes to refine and improve their designs.	
<b>Make</b>					<p>Making a torch with a working electrical circuit and switch.</p> <p>Using appropriate equipment to cut and attach materials.</p> <p>Assembling a torch according to the design and success criteria.</p>	<p>Producing lists of equipment, materials and tools that they need for a task.</p> <p>Creating a step-by-step plan for making.</p> <p>Selecting materials, components or ingredients based on research or user needs.</p> <p>Explaining their choices, referring to their research.</p> <p>Understanding and explaining the importance of each safety rule.</p> <p>Consistently apply safety instructions.</p> <p>Balancing aesthetics and functionality when creating parts of a design.</p> <p>Considering when best to apply finishing effects.</p>	
<b>Evaluate</b>					Evaluating electrical products.	Reflecting on the usability, aesthetics, innovation and	

					Testing and evaluating the success of a final product.	<p>sustainability of products and discussing how design choices impact these aspects.</p> <p>Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost.</p> <p>Considering alternative materials, tools or techniques that could enhance the product.</p> <p>Providing feedback that is helpful, specific, and encouraging.</p> <p>Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had.</p>	
<b>Cooking and nutrition</b>							
<b>Design</b>		<b>Smoothies</b> Designing smoothie carton packaging by-hand.		<b>Eating Seasonally</b> Creating a healthy and nutritious recipe		<b>Developing a recipe</b> Researching existing recipes.	<b>Come dine with me</b> Writing a recipe, explaining the key

		Learning where and how fruits and vegetables grow.		for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.		Suggesting alternative ingredients.  Designing a jar label.	steps, method and ingredients.  Including facts and drawings from research undertaken.
<b>Make</b>		Chopping fruit and vegetables safely to make a smoothie.  Juicing fruits safely to make a smoothie.  Identifying if a food is a fruit.		Identifying seasonal ingredients from the UK.  Following the instructions within a recipe.  Tasting seasonal ingredients.  Peeling foods by hand or with a peeler.  Cutting ingredients safely.  Choosing ingredients based on a design brief.		Writing an alternative recipe.  Understanding cross-contamination.  Using preparation skills.  Making a developed recipe.	Following a recipe, including using the correct quantities of each ingredient.  Adapting a recipe based on research.  Working to a given timescale.  Working safely and hygienically with independence.
<b>Evaluate</b>		Tasting and evaluating different food combinations.  Describing appearance, smell and taste.  Suggesting information to be included on packaging.		Describing the texture and flavour of ingredients.  Describing the benefits of seasonal fruits and vegetables and the impact on the environment.		Explaining the farm to fork process.  Analysing nutritional content.	Evaluating a recipe, considering: taste, smell, texture and origin of the food group.  Taste testing and scoring final products.  Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning.

		Comparing their own smoothie with someone else's.					preparation and cooking process.  Evaluating health and safety in production to minimise cross contamination.
<b>Textiles</b>							
<b>Design</b>	<b>Bookmarks</b> Discussing what a good design needs.  Designing a simple pattern with paper.  Designing a bookmark.  Choosing from available materials.	<b>Puppets</b> Using a template to create a design for a puppet.					<b>Bags</b> Developing annotated sketches to communicate design ideas.  Creating pattern pieces to use in design.
<b>Make</b>	Developing fine motor/cutting skills with scissors.  Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.  Using a prepared needle and wool to practise threading.	Cutting fabric neatly with scissors.  Using joining methods to decorate a puppet.  Sequencing the steps taken during construction.					Using a ruler to accurately measure and draw lines and marks.  Using nets to create 3D objects.
<b>Evaluate</b>	Reflecting on a finished product and comparing to their design.	Reflecting on a finished product, explaining likes and dislikes.					Reflecting on the functionality and aesthetics of products. ● Discussing reasons for design choices.

Digital world (KS2 only)

<b>Design</b>				<b>Wearable technology</b> Problem solving by suggesting which features on a micro:bit might be useful and justifying my ideas.  Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge.  Developing design ideas through annotated sketches to create a product concept.  Developing design criteria to respond to a design brief.			
<b>Make</b>				Following a list of design requirements.  Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm.  Applying functional features such as using foam to create soft buttons			

<b>Evaluate</b>				Analysing and evaluating wearable technology. Using feedback from peers to improve design.			
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