

# 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>Constructing a windmill</b> Learning the importance of a clear design criteria.</p> <p>Including individual preferences and requirements in a design.</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>Pavilions</b> Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</p> <p>Building frame structures designed to support weight.</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 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>Making stable structures from card, tape and glue.</p> <p>Learning how to turn 2D nets into 3D structures.</p> <p>Following instructions to cut and assemble the supporting structure of a windmill.</p> <p>Making functioning turbines and axles which are assembled</p>	<p>Making a structure according to design criteria.</p> <p>Creating joints and structures from paper/card and tape.</p> <p>Building a strong and stiff structure by folding paper.</p>	<p>Constructing a range of 3D geometric shapes using nets.</p> <p>Creating special features for individual designs.</p> <p>Making facades from a range of recycled materials.</p>	<p>Creating a range of different shaped frame structures.</p> <p>Making a variety of free standing frame structures of different shapes and sizes.</p> <p>Selecting appropriate materials to build a strong structure and cladding.</p> <p>Reinforcing corners to strengthen a structure.</p>		<p>Building a range of play apparatus structures drawing upon new and prior 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>Boats</b> Making a boat that floats and is waterproof, considering material choices</p>	into a main supporting structure.			<p>Creating a design in accordance with a plan.</p> <p>Learning to create different textural effects with materials.</p>		
<b>Evaluate</b>	<p><b>Junk modelling</b> Giving a verbal evaluation of their own and others' junk models with adult support.</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>Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't</p> <p>Suggest points for improvements</p>	<p>Exploring the features of structures.</p> <p>Comparing the stability of different shapes.</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>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>Suggesting points for modification of the individual designs.</p>	<p>Evaluating structures made by the class.</p> <p>Describing what characteristics of a design and construction made it the most effective.</p> <p>Considering effective and ineffective designs.</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>Identifying what makes a successful structure.</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>						
<b>Mechanisms / mechanical systems</b>							
<b>Design</b>			<p><b>Fairground wheel</b> Selecting a suitable linkage system to produce the desired motion.</p> <p>Designing a wheel.</p> <p><b>Making a moving monster</b> 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>		<p><b>Making a slingshot car</b> Designing a shape that reduces air resistance.</p> <p>Drawing a net to create a structure from.</p> <p>Choosing shapes that increase or decrease speed as a result of air resistance.</p> <p>Personalising a design.</p>	<p><b>Pop up book</b> Designing a pop-up book which uses a mixture of structures and mechanisms.</p> <p>Naming each mechanism, input and output accurately.</p> <p>Storyboarding ideas for a book.</p>	
<b>Make</b>			<p><b>Fairground wheel</b> Selecting materials according to their characteristics.</p> <p>Following a design brief.</p>		<p>Measuring, marking, cutting and assembling with increasing accuracy.</p> <p>Making a model based on a chosen design.</p>	<p>Following a design brief to make a pop-up book, neatly and with focus on accuracy.</p> <p>Making mechanisms and/or structures using sliders, pivots and folds to produce</p>	

			<p><b>Making a moving monster</b> Making linkages using card for levers 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>			<p>movement.</p> <p>Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result.</p>	
<b>Evaluate</b>			<p><b>Fairground wheel</b> Evaluating different designs.</p> <p>Testing and adapting a design.</p> <p><b>Making a moving monster</b> Evaluating own designs against design criteria.</p> <p>Using peer feedback to modify a final design.</p>		<p>Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</p>	<p>Evaluating the work of others and receiving feedback on own work.</p> <p>Suggesting points for improvement.</p>	
<b>Electrical systems (KS2 only)</b>							
<b>Design</b>					<p><b>Torches</b> Designing a torch, giving consideration to the target audience and creating both design and success criteria</p>	<p><b>Doodlers</b> Identifying factors that could be changed on existing products and explaining how these would alter the form</p>	

					<p>focusing on features of individual design ideas.</p>	<p>and function of the product.</p> <p>Developing design criteria based on findings from investigating existing products.</p> <p>Developing design criteria that clarifies the target user.</p>	
<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>Altering a product's form and function by tinkering with its configuration.</p> <p>Making a functional series circuit, incorporating a motor.</p> <p>Constructing a product with consideration for the design criteria.</p> <p>Breaking down the construction process into steps so that others can make the product.</p>	
<b>Evaluate</b>					<p>Evaluating electrical products.</p> <p>Testing and evaluating the success of a final product.</p>	<p>Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.</p> <p>Determining which parts of a product affect its function</p>	

						<p>and which parts affect its form.</p> <p>Analysing whether changes in configuration positively or negatively affect an existing product.</p> <p>Peer evaluating a set of instructions to build a product.</p>	
<b>Cooking and nutrition</b>							
<b>Design</b>		<p><b>Fruit and vegetables</b> Designing smoothie carton packaging by-hand or on ICT software.</p>		<p><b>Eating Seasonally</b> Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.</p>		<p><b>What could be healthier?</b> Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients.</p> <p>Writing an amended method for a recipe to incorporate the relevant changes to ingredients.</p> <p>Designing appealing packaging to reflect a recipe.</p>	
<b>Make</b>		<p>Chopping fruit and vegetables safely to make a smoothie.</p> <p>Identifying if a food is a fruit or a vegetable.</p>		<p>Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination.</p>		<p>Cutting and preparing vegetables safely.</p> <p>Using equipment safely, including</p>	

		Learning where and how fruits and vegetables grow.		Following the instructions within a recipe.		knives, hot pans and hobs.  Knowing how to avoid cross-contamination.  Following a step by step method carefully to make a recipe.	
<b>Evaluate</b>		Tasting and evaluating different food combinations.  Describing appearance, smell and taste.  Suggesting information to be included on packaging.		Establishing and using design criteria to help test and review dishes.  Describing the benefits of seasonal fruits and vegetables and the impact on the environment.  Suggesting points for improvement when making a seasonal tart.		Identifying the nutritional differences between different products and recipes.  Identifying and describing healthy benefits of food groups.	
<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>Waistcoats</b> Designing a waistcoat in accordance to a specification linked to set of design criteria.  Annotating designs, to explain their decisions.
<b>Make</b>	Developing fine motor/cutting skills with scissors.	Cutting fabric neatly with scissors.					Using a template when cutting fabric to ensure they



	<p>Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.</p> <p>Using a prepared needle and wool to practise threading.</p>	<p>Using joining methods to decorate a puppet.</p> <p>Sequencing the steps taken during construction.</p>					<p>achieve the correct shape.</p> <p>Using pins effectively to secure a template to fabric without creases or bulges.</p> <p>Marking and cutting fabric accurately, in accordance with their design.</p> <p>Sewing a strong running stitch, making small, neat stitches and following the edge.</p> <p>Tying strong knots.</p> <p>Decorating a waistcoat, attaching features (such as appliqué) using thread.</p> <p>Finishing the waistcoat with a secure fastening (such as buttons).</p> <p>Learning different decorative stitches.</p> <p>Sewing accurately with evenly spaced, neat stitches.</p>
<b>Evaluate</b>	<p>Reflecting on a finished product and comparing to their design.</p>	<p>Reflecting on a finished product, explaining likes and dislikes.</p>					<p>Reflecting on their work continually throughout the</p>

							design, make and evaluate process.
<b>Digital world (KS2 only)</b>							
<b>Design</b>				<b>Electronic charm</b> Problem solving by suggesting potential features on a Micro: bit and justifying my ideas  Developing design ideas for a technology pouch  Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge			<b>Navigating the world</b> Writing a design brief from information submitted by a client  Developing design criteria to fulfil the client's request  Considering and suggesting additional functions for my navigation tool  Developing a product idea through annotated sketches  Placing and manoeuvring 3D objects, using CAD  Changing the properties of, or combine one or more 3D objects, using CAD
<b>Make</b>				Using a template when cutting and assembling the pouch  Following a list of design requirements  Selecting and using the appropriate tools			Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)

				<p>and equipment for cutting, joining, shaping and decorating a foam pouch</p> <p>Applying functional features such as using foam to create soft buttons</p>			<p>Explaining material choices and why they were chosen as part of a product Concept</p> <p>Programming an N,E, S,W cardinal compass</p>
<b>Evaluate</b>				<p>Analysing and evaluating an existing product</p> <p>Identifying the key features of a pouch</p>			<p>Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool</p> <p>Developing an awareness of sustainable design</p> <p>Identifying key industries that utilise 3D CAD modelling and explain why</p> <p>Describing how the product concept fits the client's request and how it will benefit the customers</p> <p>Explaining the key functions in my program, including any additions</p> <p>Explaining how my program fits the design criteria and how it would be</p>

							<p>useful as part of a navigation tool</p> <p>Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch</p> <p>Demonstrating a functional program as part of a product concept</p>
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