

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
Structures							
Design	Junk modelling Making verbal plans and material choices. Developing a junk model. Boats Designing a junk model boat. Using knowledge from exploration to inform design.	Stable structures Thinking about what others might want from a design. Beginning to recognise how products and designs in the world around us solve certain needs. Considering who they are designing for – identifying the user. Stating what they intend to make and why – identifying the purpose. Talking about ideas, with purpose and user in mind. Talking about existing products when generating ideas. Using basic drawing skills to communicate ideas.	Baby bear's chair Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. Creating ideas with design criteria in mind. Referring to specific parts of existing products when generating ideas. Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects.	Product packaging Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. Beginning to use 2D CAD software to communicate their ideas. Designing a castle with key features to appeal to a specific person/purpose. Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. Designing and/or decorating a castle tower on CAD software.	Helmets Creating a simple design criteria that outlines the basic functions of a helmet. Designing a shell structure based on user needs. Developing sketching skills with a focus on clarity and simplicity..	Bridges Designing a stable structure that is able to support weight. Creating a frame structure with a focus on triangulation.	Playground pioneers Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. Identifying more complex problem statements that consider multiple factors and constraints with guidance. Developing more independence in generating ideas. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Using 3D CAD software to communicate their ideas.

							Using a series of prototypes to refine and improve their designs.
Make	Junk modelling Improving fine motor/scissor skills with a variety of materials. Joining materials in a variety of ways (temporary and permanent). Joining different materials together. Describing their junk model, and how they intend to put it together. Boats Making a boat that floats and is waterproof, considering material choices	Choosing between a small number of materials, ingredients or components. Explaining their choices based on personal experiences. Requesting equipment appropriate to the purpose. (e.g. scissors for cutting, glue for joining) Beginning to use objects with a fixed width or length to create even spacing of markings or cuts (e.g. a lolly stick). Refining their grip to cut competently and confidently. Cutting straight lines and evenly spaced lines. Beginning to cut large shapes and thicker materials like card..	Choosing materials, ingredients or components from a wider range of materials, ingredients or components. Explaining their choices based on the properties of materials and components. Looking for ways to make cutting easier, like turning the material they are cutting, not fully closing scissors etc. Choosing known geometric shapes when making. Beginning to shape objects to improve how they work. Making a structures according to design criteria.	Creating accurate shapes from templates. Cutting out more complex shapes accurately. Cutting out more complex shapes accurately. Constructing a range of 3D geometric shapes using nets. Creating special features for individual designs. Making facades from a range of recycled materials.	Selecting materials for a specific use. Explaining choices with regard to function and form. Choosing shapes to suit the function of a product.	Making a range of different shaped beam bridges. Using triangles to create truss bridges that span a given distance and support a load. Building a wooden bridge structure. Independently measuring and marking wood accurately. Selecting appropriate tools and equipment for particular tasks. Using the correct techniques to saws safely. Identifying where a structure needs reinforcement and using card corners for support. Explaining why selecting appropriating materials is an important part of the design process.	Building a range of play apparatus structures drawing upon new and prior knowledge of structures. Measuring, marking and cutting wood to create a range of structures. Using a range of materials to reinforce and add decoration to structures. Producing lists of equipment, materials and tools that they need for a task. Selecting materials, components or ingredients based on research or user needs. Assessing risks associated with different tools and equipment. Understanding and explaining the

						Understanding basic wood functional properties. importance of each safety rule. Consistently apply safety instructions. Using a ruler to accurately measure and draw lines and marks. In small groups, cutting harder wood with a saw. Cutting in a back-and-forth sawing motion where appropriate. Balancing aesthetics and functionality when creating parts of a design. Considering when best to apply finishing effects.
Evaluate	Junk modelling Giving a verbal evaluation of their own and others' junk models with adult support. Checking to see if their model matches their plan. Considering what they would do differently if they were to do it again.	Discussing existing products, saying what they like about them. Comparing two products and discuss which is better for a specific purpose. Saying what they like about their peers' designs and products.	Exploring the features of structures. Comparing the stability of different shapes. Testing the strength of own structures. Identifying the weakest part of a structure.	Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. Explaining why they think certain aspects	Evaluating designs by comparing them against design criteria. Considering feedback from peers to suggest improvements. Evaluating how effective the chosen materials were in fulfilling the design brief.	Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. Suggesting points for improvements for own bridges and those designed by others. Improving a design plan based on peer evaluation. Testing and adapting a design to improve it as it is developed. Identifying what makes a successful structure. Reflecting on the usability, aesthetics, innovation and sustainability of products and

	Describing their favourite and least favourite part of their model. Boats Making predictions about, and evaluating different materials to see if they are waterproof. Making predictions about, and evaluating existing boats to see which floats best. Testing their design and reflecting on what could have been done differently. Investigating the how the shapes and structure of a boat affect the way it moves.	Accepting feedback and understanding it is meant to improve their work.	Evaluating the strength, stiffness and stability of own structure.	of a peer's design are effective or why they suggested specific improvements. Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. Suggesting points for modification of the individual designs.			discussing how design choices impact these aspects. Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Considering alternative materials, tools or techniques that could enhance the product.
Mechanisms / mechanical systems							
Design	.		Fairground wheel Conducting simple surveys or discussions to gather opinions on what others need or like in a design. Knowing that a survey is used to find out what people like.		Making cars Taking part in structured brainstorming sessions. Developing drawing and sketching skills with a focus on clarity and simplicity. Beginning to recognise the benefit	Gears and pulleys Noticing wider-reaching problems or needs in the community. Identifying a wide range of needs and potential barriers through market research.	

			Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. Knowing that a design brief helps to decide what to make. Knowing that design criteria are the steps for making a product successful. Creating ideas with design criteria in mind. Referring to specific parts of existing products when generating ideas. Knowing that the design criteria help when thinking of ideas. Using labels to explain parts of a design, label materials, etc. Using labels to explain parts of a design, label materials, etc.		of a range of diagram types or prototypes to communicate ideas. (eg. sketches, cross-sectional diagram, thumbnail sketches and exploded diagrams) Creating prototypes using materials with similar properties to their final design. Creating simple design criteria that outline basic functionality and appeal to individual users or target audiences. Developing designs by adding detail and justifications about materials, tools, methods.	Writing more complex problem statements that consider multiple factors and constraints. Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Beginning to use more complex annotated sketches, such as cross-sectional and exploded diagrams and pattern pieces in design. Using a series of prototypes to refine and improve their designs.	
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			Knowing that drawings can help explain how something works. Knowing that a label explains part of a drawing. Making a moving monster Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria.				
Make			Fairground wheel Choosing materials, ingredients or components from a wider range of materials, ingredients or components. Explaining their choices based on the properties of materials and components. Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc.		Following detailed safety instructions. Using a ruler as a measuring tool with increasing accuracy by creating spaced marks using millimetres and measuring lengths of objects. Handle different sizes and types of scissors with confidence. With close supervision using a hot glue gun to join wooden materials (e.g. lolly sticks).	Consistently apply safety instructions. Select appropriate scissors to handle delicate cutting tasks and challenging materials. Cutting patterns and drawings accurately. In supervised groups, using hot glue guns safely. Recognising that hot glue is useful for joining materials that need a strong bond that sets quickly.	

			Following and recalling simple safety instructions. Knowing that some tools are sharp like scissors and knives. Choosing known geometric shapes when making. Beginning to shape objects to improve how they work. Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere. Considering balance in their finishing, like evenly spaced decoration. Making a moving monster Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.		Selecting equipment required for a series of tasks based on the plan. Explain why each piece is suitable for each stage. 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).	Choosing PVA glue over hot glue for its safety when joining materials in less intensive projects.	
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			Cutting and assembling components neatly.				
Evaluate	Investigating the how the shapes and structure of a boat affect the way it moves.		Fairground wheel Discussing a range of existing products and saying what they like and dislike about them. Evaluating existing products against design criteria. Evaluating their ideas and creations against simple design criteria. Knowing that design criteria help to decide if their product is a success. Suggesting improvements to their peers' designs and products. Knowing that improve means to make something better. Knowing that their suggestions can improve someone else's work. Making a moving monster		Explaining why they think certain aspects of a peer's design are effective or why they suggested specific improvements. Reflecting on feedback to decide if and how it could be used to improve future iterations. Investigating and analysing a range of existing products by looking at their functionality and appeal. Analysing why specific products, designers or inventors are successful. Evaluating their designs by comparing them against design criteria and considering feedback from peers to suggest improvements. Evaluating how effective their chosen materials and tools	Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. Assessing their designs against a more complex set of design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Considering alternative materials, tools or techniques that could enhance the product. Providing feedback that is helpful, specific, and encouraging. Incorporating feedback from peers or users improve their product further, explaining the changes they	

			Evaluating own designs against design criteria. Using peer feedback to modify a final design.		were in fulfilling the design brief.	made and the impact they had.	
Electrical systems (KS2 only)							
Design					Torches Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.	Wobble bots Creating more complex design criteria that require considering detailed user needs, environmental impact, materials and cost. Developing more independence in generating ideas. Coming up with a broader range of ideas and deeper innovation, requiring pupils to think critically about their ideas' practicality and originality. Using a series of prototypes to refine and improve their designs.	
Make					Making a torch with a working electrical circuit and switch.	Producing lists of equipment, materials and tools that they need for a task.	

					Using appropriate equipment to cut and attach materials. Assembling a torch according to the design and success criteria.	Creating a step-by-step plan for making. Selecting materials, components or ingredients based on research or user needs. Explaining their choices, referring to their research. Understanding and explaining the importance of each safety rule. Consistently apply safety instructions. Balancing aesthetics and functionality when creating parts of a design. Considering when best to apply finishing effects.	
Evaluate					Evaluating electrical products. Testing and evaluating the success of a final product.	Reflecting on the usability, aesthetics, innovation and sustainability of products and discussing how design choices impact these aspects. Assessing their designs against a more complex set of	

						design criteria that includes functionality, aesthetics, user experience, sustainability and cost. Considering alternative materials, tools or techniques that could enhance the product. Providing feedback that is helpful, specific, and encouraging. Incorporating feedback from peers or users improve their product further, explaining the changes they made and the impact they had.	
Cooking and nutrition							
Design		Smoothies Designing smoothie carton packaging by-hand. Learning where and how fruits and vegetables grow.		Eating Seasonally Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.		.	Come dine with me Writing a recipe, explaining the key steps, method and ingredients. Including facts and drawings from research undertaken.
Make		Chopping fruit and vegetables safely to make a smoothie.		Identifying seasonal ingredients from the UK.			Following a recipe, including using the correct quantities of each ingredient.

		Juicing fruits safely to make a smoothie. Identifying if a food is a fruit.		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.			Adapting a recipe based on research. Working to a given timescale. Working safely and hygienically with independence.
Evaluate		Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. Comparing their own smoothie with someone else's.		Describing the texture and flavour of ingredients. Describing the benefits of seasonal fruits and vegetables and the impact on the environment.			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, preparation and cooking process. Evaluating health and safety in production to minimise cross contamination.
Textiles							
Design	Bookmarks Discussing what a good design needs.	Simple stitches Stating what they intend to make and					Bags Developing annotated sketches

	Designing a simple pattern with paper. Designing a bookmark. Choosing from available materials.	why - identifying the purpose. Talking about ideas, with purpose and user in mind. Using basic drawing skills to communicate ideas. Using a template to create a design for a puppet.					to communicate design ideas. Creating pattern pieces to use in design.
Make	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.	Choosing between a small number of materials, ingredients or components. Explaining their choices based on personal experiences. Explaining in simple terms why certain tools must be handled carefully. Following and recalling simple safety instructions. Using a straightedge to draw a straight line. Beginning to use objects with a fixed width or length to create even spacing					Using a ruler to accurately measure and draw lines and marks. Using nets to create 3D objects.

		of markings or cuts. (e.g. a lolly stick). Using a large plastic needle and large-weave embroidery fabric to begin to create a running stitch. Applying masking tape to fix something in place or join to edges. Adding texture to create visual interest. Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing steps for construction.					
Evaluate	Reflecting on a finished product and comparing to their design.	Saying what they like about their peers' designs and products. Accepting feedback and understanding it is meant to improve their work. 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)							
Design				Wearable technology			

				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.			
Make				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			
Evaluate				Analysing and evaluating wearable technology.			

				Using feedback from peers to improve design.			
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