



# DESIGN AND TECHNOLOGY PROGRESSION GRID

**Intent:** At Parsloes Primary School we believe that a high-quality design and technology curriculum uses the creativity and imagination of the children. The hands-on lessons encourage pupils to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. Through the evaluation of past and present design and technology, the pupils should develop a critical understanding of its impact on daily life and the wider world. Design and Technology links to other subjects, such as mathematics, science, computing and art, which enables rich opportunities for engaging experiences.

**LEARN:**

- L** – Language Acquisition
- E** – Empowering Experiences
- A** – Active and Hands-On Learning
- R** – Relevance to our Diverse Community
- N** – New Knowledge and Skills

**RUPA:**

- R** – Respectful
- U** – Understanding
- P** – Positive
- A** – Aspirational

**SMSC:**

- S** – Spiritual
- M** – Moral
- S** – Social
- C** – Cultural

	NURSERY	RECEPTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
KEY VOCABULARY	paper cut fold join juicy crunchy fruit vegetables bridge build bake bread cook car boat bus	card metal wood plastic weak strong sweet sticky cutting vehicle taste cook ingredients mix dough design structure	wheel axel body cab assemble join mechanism slider lever pivot design make evaluate slicing peeling fabric sewing needle thread	chassis axle holder dowel hacksaw function design criteria purpose structure framework healthy diet nutrition carbohydrate dairy ingredients sugar protein running stitch seam	savoury preference hygienic grown reared caught frozen electrical system crumble kit switch circuit bulb insulator control program system input device output device	fastening seam allowance prototype functional aesthetics pattern pieces hygienic edible seasonal varied diet pneumatics compression inflate deflate air-tight shell structure net scoring font	pivot linkage slot system input process output linear oscillating cam shaft crank rotation oscillating motion design brief design specification	nutrients gluten seasonality allergy intolerance frame structure reinforce stability stiffen triangulation market research functionality annotated diagram electrical system light emitting diode (LED) insulator conductor innovation

# DESIGN AND TECHNOLOGY PROGRESSION GRID

NURSERY & RECEPTION	YEAR 1 & YEAR 2	YEAR 3 & YEAR 4	YEAR 5 & YEAR 6
<b>Designing</b> - Understanding contexts, users and purposes, generating, developing, modelling and communicating ideas			
<p>Generate ideas through discussion with an adult and with others</p> <p>Make decisions about what a product should look like, choosing between alternatives</p> <p>Represent ideas in drawing</p>	<p>Generate initial ideas and simple design criteria through talking and using own experiences.</p> <p>Generate initial ideas and design criteria through investigating a variety of products</p> <p>Design appealing products for a particular user based on simple design criteria</p> <p>Develop and communicate ideas through talk, drawings and mock ups</p>	<p>Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.</p> <p>Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose.</p> <p>Produce annotated sketches, prototypes, final product sketches and pattern pieces.</p> <p>Use annotated sketches and prototypes to develop, model and communicate ideas.</p>	<p>Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</p> <p>Develop a design specification or brief to guide their thinking.</p> <p>Develop and communicate ideas through discussion and annotated drawings.</p> <p>Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</p>
<b>Making</b> - Planning/ Practical skills and techniques			
<p>Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.</p> <p>Working with paper and card to make simple flaps and hinges.</p> <p>Experience of using construction kits to build walls, towers and frameworks.</p> <p>Experience of using basic tools</p> <p>Experience of different methods of joining card and paper</p>	<p>Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing</p> <p>Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.</p> <p>Plan by selecting what to do next.</p> <p>Select and use tools, explaining their choices, to cut, shape and join paper and card.</p> <p>Use simple finishing techniques suitable for the product they are creating.</p> <p>Use new and reclaimed materials and construction kits to build structures</p> <p>Join fabric in simple ways by gluing and stitching</p> <p>Use simple patterns and templates for marking out.</p>	<p>Plan the main stages of making.</p> <p>Order the main stages of making.</p> <p>Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and fastening.</p> <p>Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</p> <p>Select and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.</p> <p>Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.</p> <p>Explain their choice of materials according to functional properties and aesthetic qualities.</p> <p>Select from and use finishing techniques suitable for the product they are creating.</p>	<p>Produce detailed lists of tools, equipment and materials.</p> <p>Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</p> <p>Select from and use a range of tools and equipment to make products that are accurately assembled and well finished.</p> <p>Work within the constraints of time, resources and cost.</p> <p>Competently select from and use appropriate tools to accurately measure, mark out, cut, chape and join construction materials to make frameworks.</p> <p>Use finishing and decorative techniques suitable for the product they are designing and making.</p>

Select and use materials and components, including electrical components, according to their functional properties and aesthetic qualities.

**Evaluating - Own ideas and products/ Existing products**

<p>Explore moving vehicles through play</p> <p>Talk about what has been successful in what they have made</p> <p>Begin to think about whether their product works e.g. would this house be a good shelter?</p>	<p>Explore and evaluate a range of products with wheels and axels</p> <p>Explore a range of everyday products that use simple sliders and levers.</p> <p>Explore a range of freestanding structures in the school and local environment.</p> <p>Evaluate a range of textile products.</p> <p>Evaluate their ideas throughout and their products against original criteria, including intended user and purpose</p>	<p>Investigate a range of textile products relevant to their projects.</p> <p>Investigate and analyse videos and products with pneumatic mechanisms</p> <p>Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.</p> <p>Investigate and analyse battery-powered products</p> <p>Test their product against the original design criteria and with the intended user.</p> <p>Take into account others' views.</p> <p>Understand how a key event/individual has influenced the development of a chosen product.</p> <p>Evaluate their own products and ideas against criteria and user needs, as they design and make.</p>	<p>Investigate and analyse books and other products with lever and linkage mechanisms.</p> <p>Investigate a range of existing frame structures.</p> <p>Evaluate their own products and ideas against criteria and user needs, as they design and make.</p> <p>Critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</p> <p>Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</p> <p>Research key events and individuals relevant to the products they are making.</p>
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**Technical Knowledge - Making products work**

<p>Know and use technical vocabulary relevant to the project</p> <p><b>Mechanisms</b> Identify wheels on a range of wheeled vehicles Explore toys that produce different types of movements</p> <p><b>Structures</b> Use construction kits to make structures</p> <p><b>Textiles</b> Use gluing to join fabric</p>	<p>Know and use technical vocabulary relevant to the project</p> <p><b>Mechanisms</b> Explore and use wheels, axels and axle holders. Distinguish between fixed and freely moving axles Explore and use levers and sliders. Understand that different mechanisms produce different types of movement.</p> <p><b>Structures</b> Know how to make freestanding structures stronger, stiffer and more stable.</p>	<p>Know and use technical vocabulary relevant to the project</p> <p><b>Mechanical Systems</b> Understand and use pneumatic mechanisms</p> <p><b>Structures</b> Develop and use knowledge of how to construct strong, stiff shell structures Develop and use nets of cubes and cuboids, and, where appropriate, more complex 3D shapes.</p>	<p>Know and use technical vocabulary relevant to the project</p> <p><b>Mechanical Systems</b> Understand and use lever and linkage mechanisms. Distinguish between fixed and loose pivots. Understand that mechanical systems have an input, process and an output. Understand how cams can be used to produce different types of movement and change the direction of movement. Understand how gears or pulleys can be used to speed up, slow down or change the direction of movement.</p>
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**Textiles**

Know and understand different methods for joining fabric, including gluing and sewing.

**Textiles**

Understand how to securely join two pieces of fabric together.  
Understand the need for patterns and seam allowances.

**Electrical Systems**

Understand and use electrical systems in their products.  
Apply their understanding of computing to program and control their products

**Structures**

Understand how to strengthen, stiffen and reinforce 3-D frameworks

**Electrical Systems**

Understand that electrical systems have an input, process and an output.

**Food and Nutrition** - Where food comes from/ Food preparation, cooking and nutrition

Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance, taste and smell.

Experience of cutting soft fruit and vegetables using appropriate utensils.

Know and use technical and sensory vocabulary relating to food and cooking

Understand where a range of fruit and vegetables came from e.g. farmed or grown at home.

Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The Eatwell Plate*

Generate initial ideas and design criteria through investigating a variety of fruit and vegetables

Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product

Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences

Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely

Plan the main stages of a recipe, listing ingredients, utensils and equipment

Select and use appropriate utensils and equipment to prepare and combine ingredients

Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.

Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.

Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.

Write a step-by-step recipe, including a list of ingredients, equipment and utensils

Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients

Make and present a food product appropriately for the intended user and purpose.

Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables/graphs/charts such as star diagrams

Understand how eating habits can be influenced to promote varied and healthy diets.

Know how to use utensils and equipment including heat sources to prepare and cook food.

Understand about seasonality in relation to food products and the source of different food products.

# ASSESSMENT

## KEY ENQUIRY QUESTIONS

	<u>Nursery</u>	<u>Reception</u>	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
How can I make a toy work?		How can we design and make a gingerbread man?	<b>Mechanisms</b> How can we design and make a wheeled vehicle?	<b>Cooking and Nutrition</b> Where does our food come from?	<b>Cooking and Nutrition / Structures</b> How do we design, make and package a healthy wrap?	<b>Structures / Key Individual / Cooking and Nutrition</b> How do we design, make and package a chocolate treat?	<b>Mechanical Systems</b> How do we create a moving scene using cogs?	<b>Frame Structures</b> How do we design and create a shelter?
How do vehicles go?		How can I make my own vehicle?	<b>Cooking and Nutrition</b> How do we design and make a healthy fruit smoothie?	<b>Joining</b> How do we make a cuddly toy?	<b>Electrical Systems</b> How do we make the Iron Man's eyes light up?	<b>Textiles</b> How do we design and make a fabric bag?	<b>Levers and Sliders</b> How do we create a pop up book with several elements?	<b>Cooking and Nutrition</b> What is a healthy and balanced diet?
How can we bake bread?		How can we design and build a house?	<b>Joining</b> How do we make a puppet from fabric?	<b>Structures</b> How do we design and make a playground structure?		<b>Mechanisms</b> How do we use pneumatics to create a mythical creature?		<b>Electrical System</b> How do we design and make a product using an electrical system?
How can we build a bridge?			<b>Levers and Sliders</b> How do we create an invitation using levers and sliders?	<b>Mechanisms</b> How do we design and make a more complex wheeled vehicle?				