# Design Technology Knowledge Progression

**Early Learning Goal/EYFS Links to: PSED (Prime Area)** including Managing Self and **Expressive arts and design (Specific Area)** including Creating with Materials

**EYFS: Please refer to EYFS Progression Documents for:**

- **Physical Development**
- **Expressive Arts and Design**

**NC Curriculum Expectations:**

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an interactive process of designing and making. They should work in a range of relevant contexts. When designing and making, pupils should be taught to:

- Design purposeful, functional, appealing products for themselves and other uses based on design criteria
- Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- Make: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing
- Make: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- Evaluate: explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria 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

**Intent:**

In EYFS, a significant proportion of meeting the early learning goals linked to DT and beyond, is delivered through high-quality D&T experiences and activities, enabling children to 'safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function' and 'use what they have learnt about media and materials in original ways, thinking about uses and purposes'.

In KS1, this prior learning is built upon using '*project on a page*' planning. Children improve their knowledge & skills by working through the six essentials of good practice in at least three, 8-12 hour, DT units per academic year. The six essentials ensure children learn to think carefully about: **the user, the purpose, functionality, design decisions, innovation and authenticity**. In each project children make progress in their **investigative and evaluative activities**, (learn from an existing range of products and find out about DT in the wider world), **Focused tasks**, (where they are taught specific technical knowledge, designing skills and making skills), and a **design make and evaluate assignment**, (where children create functional products with users and purposes in mind.

It is our intent to build a Design Technology curriculum which develops learning and results in the acquisition of knowledge and skills. Children will know more, remember more and understand more. Our Design Technology curriculum intends to equip children with appropriate subject knowledge, skills and understanding of key vocabulary so that they can talk like a market researcher, designer, engineer, cook or craftsperson by the time they leave our setting, so that they can continue to flourish in their next stage of education and beyond.

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| **Knowledge** | **Nursery** | **Reception** | **Year 1** | **Year 2** | **Year 3** |
| **Design** | Pupils will know how to:<br>• select and use activities and resources, with help when needed<br>• develop their own ideas and then decide which materials to use to express them<br>• choose the right resources to carry out their own plan<br>• create closed shapes with continuous lines and begin to use these shapes to represent objects | Pupils will know how to:<br>• explore, use and refine a variety of artistic effects to express their ideas and feelings<br>•return to and build on their previous learning, refining ideas and developing their ability to represent them<br>•create collaboratively, sharing ideas, resources and skills | Pupils will know how to:<br>**Understanding contexts, users and purposes**<br>-Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment.<br>-state what products they are designing and making<br>-say whether their products are for themselves or other users<br>-describe what their products are for<br>-say how their product will work<br>-say how they will make their products suitable for their intended user<br><br>**Generating, developing, modelling and communicating ideas**<br><br>-generate ideas by drawing on their own experiences<br>-Use knowledge of existing products to help come up with ideas<br>-develop and communicate ideas by talking and drawing<br>-model ideas by exploring materials, components and construction kits and by making templates and mock-ups | Pupils will know how to:<br>**Understanding contexts, users and purposes**<br>-Work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment.<br>-state what products they are designing and making<br>-say whether their products are for themselves or other users<br>-describe what their products are for<br>-say how their product will work<br>-say how they will make their products suitable for their intended user<br>-use simple design criteria to help develop ideas<br><br>**Generating, developing, modelling and communicating ideas**<br><br>-generate ideas by drawing on their own experiences<br>-Use knowledge of existing products to help come up with ideas<br>-develop and communicate ideas by talking and drawing<br>-model ideas by exploring materials, components and construction kits and by making templates and mock-ups<br>-use information and communication technology, where appropriate, to develop and communicate ideas | Pupils will know how to:<br>**Understanding contexts, users and purposes**<br>-Work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and wider environment<br>-describe the purpose of their products<br>-indicate the design features of their products that will appeal to intended users<br>-explain how particular parts of their product work<br>-gather information about the needs and wants of particular individuals and groups<br>-develop their own design criteria and use these to inform their ideas<br><br>**Generating, developing, modelling and communicating ideas**<br><br>-share and clarify ideas through discussion<br>-model their ideas using prototypes and pattern pieces<br>-use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas<br>-use computer aided design to develop and communicate ideas<br>-generate realistic ideas, focusing on the needs of the user<br>-make design decisions that take account of availability of resources |

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| **Make** | Pupils will know how to:<br>• select and use activities and resources, with help.<br>• use large-muscle movements to paint and make marks.<br>• choose the right resources to carry out their own plan.<br>• use one-handed tools and equipment.<br>• make imaginative and complex 'small worlds' with blocks and construction kits.<br>• explore different materials freely, in order to develop their ideas about how to use them and what to make. | Pupils will know how to:<br>• develop their small motor skills so that they can use a range of tools competently, safely and confidently<br>•explore use and refine a variety of artistic effects to express their ideas and feelings<br>• create collaboratively, sharing ideas, resources and skills<br>**•use a range of small tools, including scissors, paintbrushes and cutlery**<br>**• safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function** | Pupils will know how to:<br>• mark materials before cutting.<br>• cut paper and other materials safely and with some accuracy.<br>• join paper and other materials using a variety of basic methods such as gluing, taping, clipping, tying.<br>• use simple components, such as split pins.<br>• create a basic mechanism (lever/slider).<br>• test their product as they work.<br>• experiment with ways to make a structure stiffer/more stable as they work. | Pupils will know how to:<br>• with support, measure, then mark materials before cutting.<br>• cut paper and other materials safely and with increasing accuracy.<br>• with support, learn how to score card in order to allow it to fold/stand up. (Pop-up book)<br>• begin to choose the most effective joining methods for the task/materials.<br>• use simple components, such as split pins.<br>• test their product as they work, to see if it meets the requirements of the intended user.<br>• apply their knowledge of materials to make a structure stiffer/ more stable as they work. | Pupils will know how to:<br>• measure and mark materials before cutting.<br>• cut materials accurately, using appropriate tools.<br>• join a range of materials using a variety of methods, usually choosing the method most suited to the task.<br>• test their product as they work, making informed adjustments to ensure their product meets the design criteria.<br>• apply their prior knowledge and understanding to make structures stiffer/ more stable as they work.<br>• create a working mechanism (levers and linkages) and incorporate it into their product.<br>• pay attention to the finishing of their product. |
| **Technical Knowledge** | Pupils will know how to:<br>• explore how things work.<br>• choose the right resources to carry out their own plan.<br>• explore different materials freely, in order to develop their ideas about how to use them and what to make. | Pupils will know how to:<br>• explore, use and refine a variety of artistic effects to express their ideas and feelings<br>**• safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function** | Pupils will know:<br>**<u>Making Products Work</u>**<br>-about the simple working characteristics of materials and components<br>-about the movement of simple mechanisms such as levers, sliders, wheels and axles<br>-how freestanding structures can be made stronger, stiffer and more stable | Pupils will know:<br>**<u>Making Products Work</u>**<br>-about the simple working characteristics of materials and components<br>-about the movement of simple mechanisms such as levers, sliders, wheels and axles<br>-how freestanding structures can be made stronger, stiffer and more stable | Pupils will know:<br>**<u>Making Products Work</u>**<br>How to use learning from science to help design and make products that work.<br>How to use learning from mathematics to help design and make products that work<br>That mechanical and electrical systems have an input process and output<br>-how mechanical systems, such as levers and linkages or pneumatic systems create movement<br>-how simple electrical circuits can be used to make products<br>-how to make strong, stiff, shell structures. |
| **Make –Vocabulary**<br>(revision)<br>(new vocab) | Make, cut, glue, stick, hard, soft, smooth, bumpy, blocks, bricks | Make, cut, glue, stick, hard, soft, smooth, bumpy, model, blocks, bricks, join, strong, stiff, build, shapes, materials | Make, cut, glue, stick, hard, soft, smooth, bumpy, blocks, bricks, join, strong, stiff, build, shapes, materials, model,<br><br>**<u>Mechanisms -sliders and levers</u>** | Make, cut, glue, stick, hard, soft, smooth, bumpy, join, strong, stiff, build, bricks, blocks, model, shapes, materials, model<br><br>**<u>Mechanisms – sliders and levers</u>** | moving part mechanism lever linkage fixed pivot loose pivot, battery circuit switch bulb electrical engineer Alexander Graham Bell, net scoring tab accuracy packaging product designer graphic designer shelf-appeal |

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| | | | slider, lever, pivot, slot, bridge/guide<br>Card, masking tape, paper fastener, join.<br>Pull, push, up, down, straight, curve, forwards, backwards<br><br>**Mechanisms – wheels and axles**<br><br>Vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used.<br>**Structures**<br>Cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder. | slider, lever, pivot, slot, bridge/guideCard, masking tape, paper fastener, join.Pull, push, up, down, straight, curve, forwards, backwards<br><br>**Mechanisms – wheels and axles**<br><br>Vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used.<br>**Structures**<br>Cut, fold, join, fix, structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved, metal, wood, plastic, circle, triangle, square, rectangle, cuboid, cube, cylinder. | |
| **Textiles Vocabulary** | | | Names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality, mock-up, | Names of existing products, joining and finishing techniques, tools, fabrics and components, template, pattern pieces, mark out, join, decorate, finish, features, suitable, quality, mock-up, | |
| **Food – Cooking and Nutrition** | Pupils will know how to:<br>•name some healthy fruits<br>• make healthy choices about food and drink<br>• wash their hands before fruit time<br>• use their senses when preparing to try new fruits<br>• with support, and in a group, make healthy recipes with fruit | Pupils will know how to:<br>•name healthy fruits and vegetables<br>• talk about healthy eating<br>• wash their hands before handling food<br>• use their senses when trying new fruits so that they have at least tried each fruit before the end of the school year | Pupils will know:<br>-all food comes from plants or animals<br>That food has to be farmed, grown elsewhere (e.g.) home or caught<br>-how to name and sort foods<br>-that everyone should eat at least 5 portions of fruit or vegetables per day | Pupils will know:<br>-all food comes from plants or animals<br>That food has to be farmed, grown elsewhere (e.g.) home or caught<br>-how to name and sort foods into the five groups on the eat well plate | Pupils will know:<br>farming techniques used to produce food<br>the effect different food groups have on the body<br>-how to prepare a variety of dishes, including using a heat source. |

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| | | • make healthy recipes with fruit and vegetables<br>• **understand the importance of healthy food choices** | -how to prepare simple dishes safely and hygienically, without using a heat source<br>-how to use techniques such as cutting and peeling. | -that everyone should eat at least 5 portions of fruit or vegetables a day | |
| **Food Technology Vocabulary**<br>(revision)<br>(new vocab) | Spoon, fork, bowl, hot, mix, stir, cook, cooker, apron, (names of fruits), touch, smell, taste, feel, look | Spoon, fork, bowl, hot, mix, stir, cook, cooker, apron<br>Jug, microwave, turn, apron, oven, cut, melt, bake, hob, wash hands, pour, (names of fruits & vegetables) touch, smell, taste, feel, look | Spoon, fork, bowl, hot, mix, stir, cook, cooker, apron, taste, feel, look.<br>Jug, microwave, turn, oven, cut, melt, bake, hob, wash hands, pour<br><br>Skin, pip, core, cutting, peeling, squeezing, choosing ingredients, planning, tasting, design, evaluate, criteria<br><br>Sensory vocabulary: soft, juicy, crunchy, sticky<br>Names of ingredients, equipment and utensils (as per PoP) | Sensory vocabulary: crunchy, sweet, smooth, sharp, crisp, sour.<br><br>Skin, pip, core, cutting, peeling, squeezing, choosing ingredients, planning, tasting, design, evaluate, criteria<br><br>Flesh, slicing, healthy diet, investigating tasting, arranging, popular<br><br>Sensory Vocabulary: sweet, sharp, crisp, sour.<br>Names of ingredients, equipment and utensils (as per POP) | Slice, grate, glaze, pastry brush,mould,blanch,parchment, part-bake, baking beads, low-sugar<br>Names of ingredients, equipment and utensils |
| **Evaluate** | Pupils will know how to:<br>• explore how things work<br>• explore materials freely, in order to develop their ideas about how to use them and what to make<br>• say what they have made<br>• understand 'why' questions | Pupils will know how to:<br>• ask questions to find out more<br>• use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen<br>• say what they have made and recall some of the steps as to how they made it<br>• say what they like about what they have made<br>• **safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function**<br>• **share their creations, explaining the process they have used** | Pupils will know how to:<br><u>Existing Products</u><br>Explore what products are<br>Explore who products are for<br>Explore how products work<br>Explore what materials products are made from<br>Explore what they like and dislike about a product | Pupils will know how to:<br><u>Existing Products</u><br>Explore what products are<br>Explore who products are for<br>Explore how products work<br>Explore how products are used<br>Explore what materials products are made from<br>Explore what they like and dislike about a product<br>Explore where products might be used | Pupils will know how to:<br><u>Existing Products</u><br>Investigate & analyse:<br>How well products have been designed<br>How well products have been made<br>Why materials have been chosen<br>What methods of construction have been used<br>How well the product works<br>How well products achieve their purpose<br>How well products meet user needs and wants<br>Whether products could be recycled or reused.<br>About inventors, designers and manufacturers who have developed ground-breaking products. |
| **Subject Specific Vocabulary**<br>(revision) | Materials<br>tools | Materials, tools, design, designer, construct | Materials, tools, design, designer, construct, drawing, | Materials, tools, design, designer, construct, drawing, user, product, purpose, sketch, label | Annotated sketch, component, computer-aided design, design criteria |

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| (new vocab) | | | user, product, purpose, sketch, label | Intended user, existing product, design criteria. | |

**Impact: (How will we know what the children have learnt)**

In the EYFS, children's work is recorded on Tapestry. In KS1, children's initial ideas, designs and evaluations are usually recorded in their learning journey, along with a photograph of their finished product. Leaders speak to children about their work, with the expectation that they can talk like a market researcher, designer, engineer, cook or craft-maker. Children share their work with others through authentic experiences, including sharing of learning events within the school and the wider community. The impact being that children know more, remember more and understand more about Design Technology enabling them to reach age-related expectations. As designers, children will develop skills, attributes and language that they can use beyond school and into adulthood.