# *Design and Technology Progression of Knowledge and Skills*

## Key Stage 1 National Curriculum Expectations

**Design**

Pupils should be taught to:

- design purposeful, functional, appealing products for themselves and other users 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**

Pupils should be taught to:

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing];
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

**Evaluate**

Pupils should be taught to:

- explore and evaluate a range of existing products;
- evaluate their ideas and products against design criteria.

**Technical Knowledge**

Pupils should be taught to:

- 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.

**Cooking and Nutrition**

Pupils should be taught to:

- use the basic principles of a healthy and varied diet to prepare dishes;
- understand where food comes from.

## Key Stage 2 National Curriculum Expectations

**Design**

Pupils should be taught to:

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups;
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.

**Make**

Pupils should be taught to:

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately;
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.

**Evaluate**

Pupils should be taught to:

- investigate and analyse a range of existing products;
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work;
- understand how key events and individuals in design and technology have helped shape the world.

**Technical Knowledge**

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures;
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages];
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors];
- apply their understanding of computing to program, monitor and control their products.

**Cooking and Nutrition**

Pupils should be taught to:

- understand and apply the principles of a healthy and varied diet;
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques; understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

| EYFS | **Expressive Arts and Design**<br>**ELG: Creating with Materials**<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<br>• Make use of props and materials when role playing characters in narratives and stories. |
|---|---|

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|
| **DESIGNING** | • I think of design ideas and design products for a purpose.<br>• I begin to use a ruler where necessary when drawing designs.<br>• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.<br>• I label my design. | • I think of ideas and plan for a clear purpose and an intended user.<br>• I refine my design after the technical challenge tasks.<br>• I select the materials and name the technique I am using for my design.<br>• label my designs with moving parts or key features. | • I think of ideas and plan for a clear purpose and an intended user to meet a range of different needs.<br>• I refine my design after the technical challenge tasks, giving reasons for our changes.<br>• I can carefully select appropriate tools, materials and techniques, explaining why we have chosen them.<br>• I label my designs with moving parts, key features. | • I think of ideas and plan for a clear purpose and an intended user to meet a range of different needs.<br>• I refine my design after the technical challenge tasks, taking the views of users into account.<br>• I can work efficiently by carefully selecting appropriate tools, materials and techniques, explaining why we have chosen them.<br>• I label my designs with moving parts, key features and explanation of how my product will work. | • I can design with a user in mind, motivated by the service a product will offer.<br>• I can continually refine my design and make prototypes.<br>• I can carefully select materials for a purpose, ensuring the finished product is of high quality.<br>• I can draw and label a 3D design clearly with an explanation of how my product will work. | • I can design with a user in mind, motivated by the service a product will offer and results from market research.<br>• I make products through stages of prototypes, making continual refinements and explaining the strengths and weakness.<br>• I can carefully select materials for a purpose, ensuring the finished product is of high quality.<br>• I can draw and label a 3D design clearly with an explanation of how my product will work. |
| **FOOD** | • I use knives safely to cut food (with help).<br>• I use a mixing bowl to prepare a mixture.<br>• I can make a basic food product.<br>• I know that I have to wash my hands and keep work surfaces clean when preparing food. | • I cut, peel or grate ingredients safely and hygienically.<br>• I can design and make a basic food product.<br>• I can assemble and cook ingredients.<br>• I begin to measure ingredients using measuring cups or spoons. | • I prepare ingredients safely and hygienically using appropriate utensils.<br>• I can follow a recipe.<br>• I can weigh or measure ingredients using weighing scales.<br>• I can assemble and cook ingredients<br>• I describe my food product in terms of taste, texture, flavour | | • I understand the importance of correct storage and handling of ingredients.<br>• I carefully select ingredients based on the consumers' needs and preferences.<br>• I can weigh and measure ingredients accurately and scale up or down a recipe. | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | and relate this to the intended purpose of the food. | | • I can assemble and cook ingredients and refine methods and cooking times and temperatures. | |
| **TEXTILES** | • I can choose fabric suitable for a purpose.<br>• I can begin to mark and cut fabric.<br>• I can join fabrics with glue. | • I can choose fabric suitable for a purpose.<br>• I use accurate measurements in cm when marking my fabric.<br>• I join textiles using glue or a simple stitch. | • I can choose fabric suitable for a purpose.<br>• I design and make my textile.<br>• I use sharp scissors accurately to cut textiles into various shapes.<br>• I decorate textiles using cross stitch. | • I can thread needles & tie knots with greater independence<br>• I can develop a basic running stitch and sew an over stitch<br>• I can practice a basic running stitch on binca;<br>• I can measure, mark and cut fabric using a paper template<br>• I can select a stitch style to join fabric neatly | | • I can design (including measurements) my own textiles product.<br>• I create an object (cushion) that employ a seam allowance.<br>• I use my art textiles skills such as stitching to help create a product that is sturdy, aesthetically pleasing and fit for purpose.<br>• My products have an awareness of commercial appeal.<br>• I mark out using my own patterns and templates.<br>• I join textiles using skills of stitching, embroidering and plaiting to make a durable and desirable product. |
| **CONTROL AND MECHANISMS** | • I have explored how moving objects work.<br>• I have made a product that uses movement. (lever/pulley/sliders)<br>• Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products. | • I have made a product using wheels and winding mechanisms.<br>• I have made a product that moves using a turning mechanism (e.g. wheels, winding) or a lever or a hinge (to make a movement) | | • I have made a product that uses both electrical and mechanical components.<br>• I combine a number of components well in my product.<br>• I use simple circuits to either illuminate or create motion.<br>• I have chosen components that can be controlled by switches or by ICT equipment. | • My product is well finished in a way that would appeal to users.<br>• My product is improved after testing.<br>• I can convert rotary motion to linear using cams.<br>• I can develop a range of practical kills to create products ( for example cutting, drilling, screwing, nailing, gluing and sanding)<br>• I can understand and use mechanical systems in products | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | • My product is well finished in a way that would appeal to users.<br>• My product is improved after testing.<br>• | [for example, gears, pulleys, cams, levers and linkages]<br>• I can spot issues with my product in the planning and testing stages and make appropriate alterations. | |
| **STRUCTURES** | • I have made basic structures.<br>• I describe the materials I have used to make my structure.<br>• I measure and mark out the materials I need for my structure.<br>• I have found out how to make materials for my structure stronger by folding, joining or rolling. | • I have made basic structures.<br>• I measure and mark out the materials I need for my structure.<br>• I have found out how to make materials for my structure stronger by folding, joining or rolling.<br>• I can make structures stronger by folding, joining or by changing their shape (columns, triangles).<br>• I accurately measure and mark out materials with care and use safe ways of cutting it, including using a junior hacksaw.<br>• I use a range of joins. | • I describe the materials I have used to make my structure.<br>• I understand how freestanding structures can be made stiffer and stronger and can use this knowledge to improve my structure.<br>• I use scoring, cutting and folding to shape materials accurately.<br>• My methods of working are precise so that products have a high quality finish.<br>• I join materials to make products using both permanent and temporary fastenings. | • I can show how to make strong, stiff structures using flimsy materials, such as paper and cardboard.<br>• I measure precisely using mm and then use scoring, and folding to shape materials accurately with a focus on precision.<br>• I make cuts (scissors, snips, saw) accurately and reject pieces that are not accurate and improve my technique.<br>• I can accurately apply a range of finishing techniques including those from art to achieve a desired aesthetic.<br>I can create complex joints to hold together heavier, more complex structures. | | • I measure and select materials with workability in mind.<br>• I make very careful and precise measurements so that joins, holes and openings are in exactly the right place.<br>• I ensure that edges are finished by sometimes adding other materials. (e.g. edging strips).<br>• My joins are strong and stable, giving extra strength to my products- as well as some joins being flexible to allow for dismantling or folding. |
| **EVALUATING PROCESSES AND PRODUCTS** | • I can talk about my own and others' work.<br>• I can begin to describe how a product works.<br>• I can look at different existing products/designs. | • I recognise what I have done well in my work.<br>• I suggest things I could do in the future.<br>• I can compare existing products/designs. | • I identify where my evaluations have led to improvements in my products.<br>• I can discuss the strengths and weaknesses of existing designs against a criteria. | • I reflect on my designs and develop them bearing in mind the way they will be used.<br>• I can independently identify what is working well and what can be improved.<br>• I can evaluate and analyse, specifically, | • I test and evaluate my products, showing that I understand the situations my products will have to work.<br>• I can begin to evaluate the pros and cons of using different materials and resources. | • I evaluate my products and how I used information sources to inform my design.<br>• I am aware that resources may be limited (budget, time, availability). |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | • I can look at and discuss the work of famous and important designers. | what makes an existing product good.<br>• I understand how designers | • I can use the strengths of an existing products to evaluate and improve my product.<br>• I understand how the important designs have changed the world. | • I can evaluate an existing product and suggest improvements.<br>• I can evaluate the importance of previous design and technology feats and explain how they have changed the world. |