Design and Technology: Progression of Skills

By discipline · Years 3 to 6

Our design and technology strands

Development Question | Design Inspiration | Technical Knowledge | Practical Knowledge | Design Process | Evaluate

What children can do in each design and technology discipline, by year group. Shaded cells show a discipline that is not taught in that year.

	Cookery	Electrical Systems	Mechanical Systems	Digital World	Textiles	Structures
Year 3	• Children can design a healthy meal based on a food combination which works well together. • Children can slice food safely using the bridge or claw grip. • Children can construct a meal that meets a design brief. • Children can describe the taste, texture and smell of ingredients used • Children can use taste testing for food combinations and final products. • Children can describe the information that should be included on a label. • Children can evaluate which grip was most effective.		• Children can design a pop-up book which uses a mechanism • Children can use storyboarding ideas for a book. • Children can follow a design brief to make a pop-up book, neatly and with focus on accuracy. • Children can make mechanisms and/or structures using sliders and folds to produce movement. • Children can use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. • Children can evaluate the work of others and receive feedback on their own work. • Children can suggest points for improvement.		• Children can design a pouch for a character from a story • Children can select and cut fabrics for sewing. • Children can decorate a pouch using fabric glue or running stitch. • Children can thread a needle. • Children can sew using running stitch, with evenly spaced, neat, even stitches to join fabric. • Children can neatly pin and cut fabric using a template. • Children can evaluate the quality of the stitching on others' work. • Children can identify aspects of their peers' work that they particularly like and explain why.	
Year 4		• Children can apply scientific knowledge to generate design ideas • Children can identify the target audience • Children can select materials based on their properties • Children can create and incorporate a functional circuit • Children can conceal the circuit inside a greetings card • Children can experiment with testing series and parallel circuits to determine which would be fit for purpose • Children can draw circuit diagrams and symbols knowing the function of different circuit components		• Children can write design criteria for a programmed timer • Children can explore different mindfulness strategies. • Children can apply the results of research to further inform design criteria. • Children can develop a prototype case for a mindful moment timer. • Children can use and manipulate shapes and clipart by using computer-aided design (CAD), to produce a logo. • Children can follow a list of design requirements. • Children can create a 3D structure using a net. • Children can program a product, to time a set number of seconds/minutes upon button press. • Children can investigate and analyse a range of timers by identifying and comparing their advantages and disadvantages. • Children can evaluate a program against points on the design criteria and amend them to include any changes made. • Children can document and evaluate their project. • Children understand what a logo is and why they are important in the world of design and business. • Children can test the program for bugs (errors in the code). • Children can find and fix the bugs (debug) in the code.	• Children can design and make a template from an existing cushion and apply individual design criteria. • Children can follow design criteria to create a cushion • Children can select and cut fabrics with ease using fabric scissors • Children can thread needles with greater independence. • Children can tie knots with greater independence. • Children can sew using cross stitch to join fabric. • Children can decorate fabric using appliqué. • Children can complete design ideas with stuffing and sewing the edges • Children can evaluate an end product and think of other ways in which to create similar items.	

	Cookery	Electrical Systems	Mechanical Systems	Digital World	Textiles	Structures
Year 5			• Children can design a toy which uses a pneumatic system. • Children can set design criteria from a design brief. • Children can generate ideas using thumbnail sketches and exploded diagrams. • Children can create a pneumatic system to create a desired motion. • Children can build a secure housing for a pneumatic system. • Children can use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Children can select materials due to their functional and aesthetic characteristics. • Children can manipulate materials to create different effects by cutting, creasing, folding and weaving • Children can use the views of others to improve designs. • Children can test and modify the outcome, suggesting improvements. • Children can understand the purpose of exploded-diagrams through the eyes of a designer and their client.	• Children can research for a particular (user's) animal's needs. • Children can develop design criteria based on research. • Children can generate multiple housing ideas using building bricks. • Children can understand what a virtual model is and the pros and cons of traditional and CAD modelling. • Children can place and manoeuvre 3D objects, using CAD. • Children can change the properties of, or combine one or more 3D objects, using CAD. • Children can understand and discuss the functional and aesthetic properties of plastics. • Children can use programming to monitor the ambient temperature and code an (audible or visual) alert when the temperature rises above or falls below a specified range. • Children can explain key functions in the program (audible alert, visuals). • Children can explain how the product would be useful for an animal carer including programmed features.		• Children can design a stable structure that is able to support weight. • Children can create a frame structure with a focus on triangulation. • Children can make a range of different shaped beam bridges. • Children can use triangles to create truss bridges that span a given distance and support a load. • Children can build a wooden bridge structure. • Children can independently measure and mark wood accurately. • Children can select appropriate tools and equipment for particular tasks. • Children can use the correct techniques to saw safely. • Children can identify where a structure needs reinforcement and use card corners for support. • Children can explain why selecting appropriate materials is an important part of the design process. • Children understand basic wood functional properties • Children can adapt and improve their own bridge structure by identifying points of weakness and reinforcing them as necessary. • Children can suggest points for improvement to their own bridges and those designed by others
Year 6	• Children can adapt a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Children can write an amended method for a recipe to incorporate the relevant changes to ingredients. • Children can design appealing packaging to reflect a recipe • Children can cut and prepare vegetables safely. • Children can use equipment safely, including knives, hot pans and hobs. • Children know how to avoid cross-contamination. • Children can follow a step by step method carefully to make a recipe. • Children can identify the nutritional differences between different products and recipes. • Children can identify and describe the health benefits of food groups.	• Children can design a product by identifying and naming the components required • Children can draw a design from three different perspectives • Children can generate ideas through sketching and discussion • Children can model ideas through prototypes • Children can construct a stable base • Children can accurately cut, fold and assemble a net • Children can decorate the product to a high quality finish • Children can make and test a circuit • Children can incorporate a circuit into a product • Children can test their own and others' finished products, by identifying what went well and making suggestions for improvement				• Children can design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. • Children can build a range of play apparatus structures drawing upon new and prior knowledge of structures. • Children can measure, mark and cut wood to create a range of structures. • Children can use a range of materials to reinforce and add decoration to structures. • Children can improve a design plan based on peer evaluation. • Children can test and adapt a design to improve it as it is developed. • Children can identify what makes a successful structure.