

National Curriculum Objectives – Design and Technology

KS1 Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design

- 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

- 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

- 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.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to:

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

KS2	<p>Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment]. When designing and making, pupils should be taught to:</p> <p>Design</p> <ul style="list-style-type: none">▪ 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 <p>Make</p> <ul style="list-style-type: none">▪ 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 <p>Evaluate</p> <ul style="list-style-type: none">▪ 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 <p>Technical knowledge</p> <ul style="list-style-type: none">▪ 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. <p>Cooking and nutrition</p> <p>As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life. Pupils should be taught to:</p> <ul style="list-style-type: none">▪ 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.
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Skill	Year 1	Year 2
Design	<ul style="list-style-type: none"> think of their own ideas and can explain verbally what they want to do. use pictures and words to plan. 	<ul style="list-style-type: none"> say the next step of their design. say the tools and material they need explaining why they have chosen them use pictures, diagrams, models and words to plan.
Make	<ul style="list-style-type: none"> say what they are making and explain the choices they have made. They can select appropriate tools and resources for their project. assemble, join and combine their components. 	<ul style="list-style-type: none"> select materials according to their properties. measure materials to use in their construction. join materials in different ways including joining them to make them move. decorate their design appropriately.
Evaluate	<ul style="list-style-type: none"> explore existing products and discuss who and what they are for. (Toys) describe how something works and evaluate their own and others work. 	<ul style="list-style-type: none"> evaluate existing products. (Train) explain what went well with their work. explain how they would improve their work if they did it again.
Technical Knowledge	<ul style="list-style-type: none"> They can build a structure and select materials to make it stronger, stiffer and more stable. They can cut material with scissors. 	<ul style="list-style-type: none"> understand the properties of material and how this makes them fit for purpose. measure, cut and join chosen textiles together. know how to join materials in different ways. They can make a product which moves for example through the use of levers, sliders, wheels and axels.
Cooking and Nutrition	<ul style="list-style-type: none"> They can cut, peel and grate food safely. They can describe the texture of food. They understand the importance of hygiene both personal and environmental. They understand how to make food look appealing for example decorating to make it look appetizing. know that food comes from plants or animals. 	<ul style="list-style-type: none"> name and sort food into the Eatwell plate, explain what it means to be hygienic and they can demonstrate this. know that food has to be farmed, grown elsewhere or caught prepare simple savoury dishes safely and hygienically.
Area of Study	Building their own toys Pirate ship Selecting materials to build	Transport Skeleton of a dinosaur 3D model of a house Mini beast hotel Cooking – Pizza

Skill	Year 3	Year 4
Design	<ul style="list-style-type: none"> • create a design that meets a criterion. • plan the order of creation and the tools they will need. • use labelled realistic sketches to describe and design. 	<ul style="list-style-type: none"> • compare and select the best design for a product. • produce and explain their product plan to others. • are confident to try new and different ideas.
Make	<ul style="list-style-type: none"> • select the most appropriate materials and tools. • use tools and equipment accurately. • make cuts and holes in materials accurately. • use a range of techniques to shape and mould. • apply a range of finishes, including those from art and design. 	<ul style="list-style-type: none"> • make their product strong. • apply finishing techniques their projects showing an awareness of audience and discuss its aesthetic qualities. • use a template.
Evaluate	<ul style="list-style-type: none"> • explain what they have changed to make their design even better. 	<ul style="list-style-type: none"> • suggest some improvements to their design recognising the strengths and areas of improvement. • know how to check if their design has been successful.
Technical Knowledge	<ul style="list-style-type: none"> • use pulleys to create movement in their products. • measure accurately to ensure everything is precise. 	<ul style="list-style-type: none"> • create a product which uses both electrical and mechanical components. • devise a template. • strengthen and reinforce more confidently 3D structures.
Cooking and Nutrition	<ul style="list-style-type: none"> • choose the right ingredients for a product and describe how they will come together. • use equipment safely. • ensure their product looks attractive. • understand the seasonality of food. 	<ul style="list-style-type: none"> • know how to be hygienic and safe. • present their food in an interesting way. • apply their knowledge of a healthy and balanced diet. • will prepare a savoury dish using techniques including spreading, kneading and baking. (Romans)
Area of Study	<ul style="list-style-type: none"> • Roman – oil burner • Pop up cards • Maya Pulley system for moving blocks of stone • Junk food – reducing food waste – cooking with leftovers • Pizza making • Romans – broth making 	<p>Fanwood – make a sandwich, balanced diet</p> <p>Circuits</p> <p>Fanwood – 3D structure</p>

Skill	Year 5	Year 6
Design	<ul style="list-style-type: none"> research and consider a user's view before designing their product. Produce a detailed plan identify the good points and draw backs in alternative plans. explain how their finished product will be of good quality and how it will appeal to the audience. make a prototype first. 	<ul style="list-style-type: none"> use a range of diagrams including cross-sectional and exploded diagrams and they can begin to use ICT for design. create a design aimed at a specific individual or group (Spirit Alive).
Make	<ul style="list-style-type: none"> They can use a range of tools and equipment expertly. persevere and complete their project. continually review and improve their product throughout the making process. join different types of textiles in different ways. 	<ul style="list-style-type: none"> use constructional materials for example lego or mechano. use a finishing technique that involves a numbers of steps. (poppies)
Evaluate	<ul style="list-style-type: none"> refine and improve their product after testing it. evaluate how well their product is presented. understand how the Industrial Revolution impacted on the textile industry and the people that work with it. (Saltaire/Rhoda/Titus Salt) 	<ul style="list-style-type: none"> know about key events and individuals who have helped shape the world for example tanks, air raid shelters. (WW1 and 2)
Technical Knowledge	<ul style="list-style-type: none"> use gears, pulleys or cams to create movement in their products. measure accurately to ensure everything is precise. 	<ul style="list-style-type: none"> reinforce to strengthen more complex 3D structures for example lego, mechano. use and understand an increased number of components to create an electrical series circuit including motors.
Cooking and Nutrition	use chopping and slicing to produce a savoury dish safely and hygienically. create recipes to promote a healthy and varied diet.	know that food is grown, reared and caught. use a range of techniques taught to produce a savoury dish. adapt recipes for different tastes.
Area of Study	<ul style="list-style-type: none"> Ancient Egypt – Death masks Saltaire - Looms 	WW1 and WW2 – rationing , tanks etc...

To discuss at staff meeting

- Apply their understanding of computing to programme, monitor and control products – how can we cover this objective?
- How are year groups going to meet these objectives through the topics they already teach? – we have given some suggestions but areas of study needs expanding.