

National Curriculum Expectations

Purpose of study = Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

Attainment targets = By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Key Stage 1

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.

Key Stage 2

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:

Design

- 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

- 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

- 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

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:

Key stage 1

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

Key stage 2

- 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.

Context 2018/2019 (flexible each year)			
Skills Progression			
Reception			
Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can explain what I am making and which materials I am using. - I can select materials from a limited range that will meet a simple design criteria e.g. shiny. - I can select and name the tools needed to work the materials e.g. scissors for paper. - I can describe simple models or drawings of ideas and intentions. - I can discuss my work and its progresses. 	<ul style="list-style-type: none"> - I can begin to create my design using basic techniques. - I can start to build structures joining components together. - I can look at simple hinges, wheels and axles. - I can use technical vocabulary when appropriate. - I can begin to use scissors to cut straight and curved edges and hole punches to punch holes. - I can explore using/holding basic tools such as a saw or hammer. - I can use adhesives to join material. 	<ul style="list-style-type: none"> - I can say what I like and do not like about items I have made and attempt to say why. - I can begin to talk about my designs as they develop and identify good and bad points. - I can start to talk about changes made during the making process. - I can discuss how closely my finished products meet my design criteria. 	<ul style="list-style-type: none"> - I can begin to develop a food vocabulary using taste, smell, texture and feel. - I can explore familiar food products e.g. fruit and vegetables. - I can stir, spread, knead and shape a range of food and ingredients. - I can begin to work safely and hygienically. - I can start to think about the need for a variety of foods in a diet. - I can measure and weigh food items, non statutory measures e.g. spoons, cups.
Year 1			
Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can begin to draw on my own experience to help generate ideas. - I can begin to understand the development of existing products: What they are for, how they work, materials used. - I can start to suggest ideas and explain what I am going to do. - I can understand how to identify a target group for what I intend to design and make based on a design criteria. - I can begin to develop my ideas through talk and drawings. - I can make templates and mock ups of my ideas in card and paper or using ICT. 	<ul style="list-style-type: none"> - I can begin to make my design using appropriate techniques. - I can begin to build structures, exploring how they can be made stronger, stiffer and more stable. - I can explore and use mechanisms [for example, levers, sliders, wheels and axles], in my products. - I can, with help, measure, mark out, cut and shape a range of materials. - I can explore using tools <i>e.g. scissors and a hole punch</i> safely. - I can begin to assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape. - I can begin to use simple finishing techniques to improve the appearance of my product. 	<ul style="list-style-type: none"> - I can start to evaluate my product by discussing how well it works in relation to the purpose (design criteria). - I can, when looking at existing products, explain what I like and dislike about products and why. - I can begin to evaluate my products as they are developed, identifying strengths and possible changes I might make. 	<ul style="list-style-type: none"> - I can begin to understand that all food comes from plants or animals. - I can explore and understand that food has to be farmed, grown elsewhere (e.g. home) or caught. - I can start to understand how to name and sort foods into the five groups in 'The Eat well plate' - I can begin to understand that everyone should eat at least five portions of fruit and vegetables every day. - I know how to prepare simple dishes safely and hygienically, without using a heat source. - I know how to use techniques such as cutting, peeling and grating.
Year 2			
Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can start to generate ideas by drawing on my own and other people's experiences. - I can begin to develop my design ideas through discussion, observation, drawing and modelling. - I can identify a purpose for what I intend to design and make. - I can understand how to identify a target group for what I intend to design and make based on a design criteria. - I can develop my ideas through talk and drawings 	<ul style="list-style-type: none"> - I can begin to select tools and materials; use correct vocabulary to name and describe them. - I can build structures, exploring how they can be made stronger, stiffer and more stable. - I can, with help, measure, cut and score with some accuracy. - I can learn to use hand tools safely and appropriately. - I can start to assemble, join and combine materials in order to make a product. - I can demonstrate how to cut, shape and join fabric 	<ul style="list-style-type: none"> - I can evaluate my work against my design criteria. - I can look at a range of existing products explain what I like and dislike about products and why. - I can start to evaluate my products as they are developed, identifying strengths and possible changes I might make. - I can talk about my ideas, saying what I like and dislike about them. 	<ul style="list-style-type: none"> - I can understand that all food comes from plants or animals. - I can know that food has to be farmed, grown elsewhere (e.g. home) or caught. - I can understand how to name and sort foods into the five groups in 'The Eat well plate' - I know that everyone should eat at least five portions of fruit and vegetables every day. - I can demonstrate how to prepare simple dishes safely and hygienically, without using a heat source.

and label parts. - I can make templates and mock ups of my ideas in card and paper or using ICT.	to make a simple product. - I can use basic sewing techniques. - I can start to choose and use appropriate finishing techniques based on my own ideas.	- I can demonstrate how to use techniques such as cutting, peeling and grating.
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Year 3

Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can generate ideas for an item considering its purpose and the user/s. - I can start to order the main stages of making a product. - I can identify a purpose and establish criteria for a successful product. - I can understand how well products have been designed, made, what materials have been used and the construction technique. - I can learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. - I can start to understand whether products can be recycled or reused. - I can explain my choice of materials and components including function and aesthetics. 	<ul style="list-style-type: none"> - I can select a wider range of tools and techniques for making my product. - I can explain my choice of tools and equipment in relation to the skills and techniques I will be using. - I can start to understand that mechanical and electrical systems have an input, process and output. - I can start to understand that mechanical systems such as levers and linkages or pneumatic systems create movement. - I know how simple electrical circuits and components can be used to create functional products. - I can measure, mark out, cut, score and assemble components with more accuracy. - I can start to work safely and accurately with a range of simple tools. - I can start to measure, tape or pin, cut and join fabric with some accuracy. 	<ul style="list-style-type: none"> - I can start to evaluate my product against original design criteria <i>e.g. how well it meet its intended purpose</i> - I can begin to disassemble and evaluate familiar products and consider the views of others to improve them. - I can evaluate the key designs of individuals in design and technology that has helped shape the world. 	<ul style="list-style-type: none"> - I can start to know that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. - I can understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. - I can begin to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. - I can start to understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' - I know that to be active and healthy, food and drink are needed to provide energy for the body.

Year 4

Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can start to generate ideas, considering the purposes for which I am designing. - I can confidently make labelled drawings from different views showing specific features. - I can develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making, if the first attempts fail. - I learn about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products. - I can explain my choice of materials and components according to function and aesthetic. 	<ul style="list-style-type: none"> - I can select a wider range of tools and techniques for making my product safely. - I know how to measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. - I can start to join and combine materials and components accurately in temporary and permanent ways. - I know how mechanical systems such as cams or pulleys or gears create movement. - I understand how more complex electrical circuits and components can be used to create functional products. - I continue to learn how to program a computer to monitor changes in the environment and control my products. - I understand how to reinforce and strengthen a 3D framework. - I can sew using a range of different stitches, to weave and knit. - I can demonstrate how to measure, tape or pin, cut and join fabric with some accuracy. - I can begin to use finishing techniques to strengthen and improve the appearance of my product using a range of equipment including ICT. 	<ul style="list-style-type: none"> - I can evaluate my products carrying out appropriate tests. - I can disassemble and evaluate familiar products and consider the views of others to improve them. - I can evaluate the key designs of individuals in design and technology and how this has helped shape the world. 	<ul style="list-style-type: none"> - I can understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world. - I can understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source. - I know how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. - I know that a healthy diet is made up from a variety and balance of different food and drink, as depicted in 'The Eat well plate' - I know that to be active and healthy, food and drink are needed to provide energy for the body.

Year 5

Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can start to generate, develop, model and communicate my ideas through discussion, annotated sketches, cross sectional and exploded diagrams and prototypes. - I can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. - I can apply a range of finishing techniques, including those from art and design - I can draw up a specification for my design- link with Mathematics and Science. - I can use results of investigations, information sources, including ICT when developing design ideas. - I can select appropriate materials, tools and techniques. - I can start to understand how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose. 	<ul style="list-style-type: none"> - I can select appropriate materials, tools and techniques e.g. cutting, shaping, joining and finishing, accurately. - I can 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. - I understand how mechanical systems such as cams or pulleys or gears create movement. - I know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control my products. - I understand that mechanical and electrical systems have an input, process and output. - I can begin to measure and mark out more accurately. - I can demonstrate how to use skills in using different tools and equipment safely and accurately. - I can cut and join with accuracy to ensure a good-quality finish to the product. - I can weigh and measure accurately (time, dry ingredients, liquids). - I can use finishing techniques to strengthen and improve the appearance of my product using a range of equipment including ICT. 	<ul style="list-style-type: none"> - I can start to evaluate a product against the original design specification and by carrying out tests. - I can evaluate my work both during and at the end of the assignment. - I can begin to evaluate it personally and seek evaluation from others. - I can evaluate the key designs of individuals in design and technology and how it has helped shape the world. 	<ul style="list-style-type: none"> - I can begin to understand that seasons may affect the food available. - I understand how food is processed into ingredients that can be eaten or used in cooking. - I know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source - I can start to understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. - I can begin to understand that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.

Year 6

Developing, planning and communicating ideas	Working with tools, equipment, materials and components to make quality products	Evaluating processes and products	Food and Nutrition
<ul style="list-style-type: none"> - I can generate, develop, model and communicate my ideas through discussion, annotated sketches, cross sectional and exploded diagrams and prototypes. - I can use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose. - I can accurately apply a range of finishing techniques, including those from art and design. - I can draw up a specification for my design- link with Mathematics and Science. - I can plan the order of my work, choosing appropriate materials, tools and techniques. - I can suggest alternative methods of making if the first attempts fail. - I can identify the strengths and areas for development in my ideas and products. - I know how much products cost to make, how sustainable and innovative they are and the impact products have beyond their intended purpose. 	<ul style="list-style-type: none"> - I can confidently select appropriate tools, materials, components and techniques and use them. - I can use tools safely and accurately. - I can assemble components to make working models. - I aim to make and to achieve a quality product. - I can pin, sew and stitch materials together to create a product. - I can demonstrate when make modifications as I go along. - I can construct products using permanent joining techniques. - I can understand how mechanical systems such as cams or pulleys or gears create movement. - I know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. - I know how to reinforce and strengthen a 3D framework. - I understand that mechanical and electrical systems have an input, process and output. 	<ul style="list-style-type: none"> - I can evaluate my products, identifying strengths and areas for development, and carrying out appropriate tests. - I can evaluate my work both during and at the end of the assignment. - I can record my evaluations using drawings with labels. - I can evaluate against my original criteria and suggest ways that my product could be improved. - I can evaluate the key designs of individuals in design and technology and how it has helped shape the world. 	<ul style="list-style-type: none"> - I understand that seasons may affect the food available. - I understand how food is processed into ingredients that can be eaten or used in cooking. - I know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source - I understand how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. - I know different food and drink contain different substances –nutrients, water and fibre – that are needed for health.

	- I can use finishing techniques to strengthen and improve the appearance of my product using a range of equipment including ICT.		
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Assessment

Flic to be completed in all year groups.
Evidence in books of the planning and evaluation stages
Observations during the making process
Photographs to evidence the outcomes

Monitoring

Monitor FLiC
Book scrutiny x 2 a year
Child interviews x 2 a year
Learning walk – focus on D&T displays as and when
Complete SEF for D&T as part of the Maths Team annually
Complete an Action Plan for D&T as part of the Maths Team annually and refine and evaluate throughout the year
Share SEF and Action Plan with link governors and involve governors throughout the year when implementing actions