

Hardwick Green Primary Academy
Science & DT Progression in Knowledge

Progression in declarative and procedural knowledge:

	KS1	LKS2	UKS2
Biology – Substantive Knowledge	<p>Plants</p> <p>a identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>b identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p>c observe and describe how seeds and bulbs grow into mature plants</p> <p>d find out and describe how plants need water, light and a suitable temperature to grow and stay healthy [Lila & the secret of the rain]</p> <p>Animals including humans</p> <p>e identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>f identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>g describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p> <p>h identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p>i notice that animals, including humans, have offspring which grow into adults</p> <p>j find out about and describe the basic needs of animals, including humans, for survival (water, food and air) [Lila & the secret of the rain]</p> <p>k describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Living things and their habitats</p> <p>l explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>m identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other [Zeraffa Giraffa]</p> <p>n identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>o describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</p>	<p>Plants</p> <p>a identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>b explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <p>c investigate the way in which water is transported within plants</p> <p>d explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p>Animals including humans</p> <p>e identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>f identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>g describe the simple functions of the basic parts of the digestive system in humans</p> <p>h identify the different types of teeth in humans and their simple functions</p> <p>i construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Living things and their habitats</p> <p>j recognise that living things can be grouped in a variety of ways</p> <p>k explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>l recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>Living things and their habitats</p> <p>a describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>b describe the life process of reproduction in some plants and animals</p> <p>c describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>d give reasons for classifying plants and animals based on specific characteristics</p> <p>Animals including humans</p> <p>e describe the changes as humans develop to old age describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>f identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>g recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>h describe the ways in which nutrients and water are transported within animals, including humans</p> <p>Evolution and inheritance</p> <p>i recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>j recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>k identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>

Materials [Egg Box Dragon]

- a distinguish between an object and the material from which it is made
- b identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- c describe the simple physical properties of a variety of everyday materials
- d compare and group together a variety of everyday materials on the basis of their simple physical properties
- e identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- f find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

Rocks

- a compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- b describe in simple terms how fossils are formed when things that have lived are trapped within rock
- c recognise that soils are made from rocks and organic matter

States of matter

- d compare and group materials together, according to whether they are solids, liquids or gases
- e observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- f identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Properties and changes of materials

- a compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- b know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- c use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- d give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- e demonstrate that dissolving, mixing and changes of state are reversible changes
- f explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Seasonal Change [Out and About]

- a observe changes across the 4 seasons
- b observe and describe weather associated with the seasons and how day length varies

Light

- a recognise that they need light in order to see things and that dark is the absence of light
- b notice that light is reflected from surfaces
- c recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- d recognise that shadows are formed when the light from a light source is blocked by an opaque object
- e find patterns in the way that the size of shadows change

Forces and magnets

- f compare how things move on different surfaces
- g notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- h observe how magnets attract or repel each other and attract some materials and not others
- i compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- j describe magnets as having 2 poles
- k predict whether 2 magnets will attract or repel each other, depending on which poles are facing

Sound

- l identify how sounds are made, associating some of them with something vibrating
- m recognise that vibrations from sounds travel through a medium to the ear
- n find patterns between the pitch of a sound and features of the object that produced it
- o find patterns between the volume of a sound and the strength of the vibrations that produced it
- p recognise that sounds get fainter as the distance from the sound source increases

Electricity

- q identify common appliances that run on electricity
- r construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- s identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- t recognise that a switch opens and closes a circuit and

Earth and space

- a describe the movement of the Earth and other planets relative to the sun in the solar system
- b describe the movement of the moon relative to the Earth
- c describe the sun, Earth and moon as approximately spherical bodies
- d use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

Forces

- e explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- f identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- g recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

Light

- h recognise that light appears to travel in straight lines
- i use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- j explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- k use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Electricity

- l associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- m compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- n use recognised symbols when representing a simple circuit in a diagram

		<p>associate this with whether or not a lamp lights in a simple series circuit</p> <ul style="list-style-type: none"> u recognise some common conductors and insulators, and associate metals with being good conductors 	
Asking Questions and Carrying Out Fair and Comparative Tests	<p>KS1 Science National Curriculum Asking simple questions and recognising that they can be answered in different ways.</p> <p>Performing simple tests.</p> <p>Children can:</p> <ul style="list-style-type: none"> a explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b begin to recognise ways in which they might answer scientific questions; c ask people questions and use simple secondary sources to find answers; d carry out simple practical tests, using simple equipment; e experience different types of scientific enquiries, including practical activities; f talk about the aim of scientific tests they are working on; g with support, start to recognise a fair test. 	<p>Lower KS2 Science National Curriculum Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Children can:</p> <ul style="list-style-type: none"> o start to raise their own relevant questions about the world around them in response to a range of scientific experiences; p start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; q recognise when a fair test is necessary; r help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; s set up and carry out simple comparative and fair tests. 	<p>Upper KS2 Science National Curriculum Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Children can:</p> <ul style="list-style-type: none"> a with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c explore and talk about their ideas, raising different kinds of scientific questions; d ask their own questions about scientific phenomena; e select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; g plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary; h use their test results to identify when further tests and observations may be needed; i use test results to make predictions for further tests.

Observing and Measuring Changes	<p>KS1 Science National Curriculum Observing closely, using simple equipment.</p> <p>Children can:</p> <ul style="list-style-type: none"> a observe the natural and humanly constructed world around them; b observe changes over time; c use simple measurements and equipment; d make careful observations, sometimes using equipment to help them observe carefully. 	<p>Lower KS2 Science National Curriculum Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Children can:</p> <ul style="list-style-type: none"> a make systematic and careful observations; b observe changes over time; c use a range of equipment, including thermometers and data loggers; d ask their own questions about what they observe; e where appropriate, take accurate measurements using standard units using a range of equipment. 	<p>Upper KS2 Science National Curriculum Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Children can:</p> <ul style="list-style-type: none"> a choose the most appropriate equipment to make measurements and explain how to use it accurately; b take measurements using a range of scientific equipment with increasing accuracy and precision; c take repeat readings when appropriate; d understand why we take an average in repeat readings.
Identifying, Classifying, Recording and Presenting Data	<p>KS1 Science National Curriculum Identifying and classifying.</p> <p>Gathering and recording data to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a use simple features to compare objects, materials and living things; b decide how to sort and classify objects into simple groups with some help; c record and communicate findings in a range of ways with support; d sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. 	<p>Lower KS2 Science National Curriculum Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> a talk about criteria for grouping, sorting and classifying; b group and classify things; c collect data from their own observations and measurements; d present data in a variety of ways to help in answering questions; e use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; f record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. 	<p>Upper KS2 Science National Curriculum Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> a independently group, classify and describe living things and materials; b use and develop keys and other information records to identify, classify and describe living things and materials; c decide how to record data from a choice of familiar approaches; d record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.

Drawing Conclusions, Noticing Patterns and Presenting Findings	<p>KS1 Science National Curriculum Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice links between cause and effect with support; b begin to notice patterns and relationships with support; c begin to draw simple conclusions; d identify and discuss differences between their results; e use simple and scientific language; f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1; g talk about their findings to a variety of audiences in a variety of ways. 	<p>Lower KS2 Science National Curriculum Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a draw simple conclusions from their results; b make predictions; c suggest improvements to investigations; d raise further questions which could be investigated; e first talk about, and then go on to write about, what they have found out; f report and present their results and conclusions to others in written and oral forms with increasing confidence. 	<p>Upper KS2 Science National Curriculum Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice patterns; b draw conclusions based in their data and observations; c use their scientific knowledge and understanding to explain their findings; d read, spell and pronounce scientific vocabulary correctly; e identify patterns that might be found in the natural environment; f look for different causal relationships in their data; g discuss the degree of trust they can have in a set of results; h independently report and present their conclusions to others in oral and written forms.
Using Scientific Evidence and Secondary Sources of Information		<p>Lower KS2 Science National Curriculum Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Children can:</p> <ul style="list-style-type: none"> a make links between their own science results and other scientific evidence; b use straightforward scientific evidence to answer questions or support their findings; c identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; d recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. 	<p>Upper KS2 Science National Curriculum Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Children can:</p> <ul style="list-style-type: none"> a use primary and secondary sources evidence to justify ideas; b identify evidence that refutes or supports their ideas; c recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact; d use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas; e talk about how scientific ideas have developed over time.

	KS1	LKS2	UKS2
Design	<p>KS1 Design and Technology National Curriculum</p> <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.</p> <p>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].</p> <p>Children design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>They generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p>Children can:</p> <ul style="list-style-type: none"> a use their knowledge of existing products and their own experience to help generate their ideas; b design products that have a purpose and are aimed at an intended user; c explain how their products will look and work through talking and simple annotated drawings; d design models using simple computing software; e plan and test ideas using templates and mock-ups; f understand and follow simple design criteria; g work in a range of relevant contexts, for example imaginary, story-based, home, school and the wider environment. 	<p>KS2 Design and Technology National Curriculum</p> <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.</p> <p>They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p> <p>Children 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.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Children can:</p> <ul style="list-style-type: none"> a identify the design features of their products that will appeal to intended customers; b use their knowledge of a broad range of existing products to help generate their ideas; c design innovative and appealing products that have a clear purpose and are aimed at a specific user; d explain how particular parts of their products work; e use annotated sketches and cross-sectional drawings to develop and communicate their ideas; f when designing, explore different initial ideas before coming up with a final design; g when planning, start to explain their choice of materials and components including function and aesthetics; h test ideas out through using prototypes; i use computer-aided design to develop and communicate their ideas (see note on p. 1); j develop and follow simple design criteria; k work in a broader range of relevant contexts, for example entertainment, the home, school, leisure, food industry and the wider environment. 	<p>KS2 Design and Technology National Curriculum</p> <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.</p> <p>They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].</p> <p>Children 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.</p> <p>They generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p>Children can:</p> <ul style="list-style-type: none"> a use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; b use their knowledge of a broad range of existing products to help generate their ideas; c design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; d explain how particular parts of their products work; e use annotated sketches, cross-sectional drawings and exploded diagrams (possibly including computer-aided design) to develop and communicate their ideas; f generate a range of design ideas and clearly communicate final designs; g consider the availability and costings of resources when planning out designs; h work in a broad range of relevant contexts, for example conservation, the home, school, leisure, culture, enterprise, industry and the wider environment.

KS1 Design and Technology National Curriculum

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 making.

Children select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing].

They select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

Children can:

Planning

- a with support, follow a simple plan or recipe;
- b begin to select from a range of hand tools and equipment, such as scissors, graters, zesters, safe knives, juicer;
- c select from a range of materials, textiles and components according to their characteristics;

Practical skills and techniques

- d learn to use hand tools and kitchen equipment safely and appropriately and learn to follow hygiene procedures;
- e use a range of materials and components, including textiles and food ingredients;
- f with help, measure and mark out;
- g cut, shape and score materials with some accuracy;
- h assemble, join and combine materials, components or ingredients;
- i demonstrate how to cut, shape and join fabric to make a simple product;
- j manipulate fabrics in simple ways to create the desired effect;
- k use a basic running stitch;
- l cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups;
- m begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.

KS2 Design and Technology National Curriculum

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 making.

Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.

They 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.

Children can:

Planning

- a with growing confidence, carefully select from a range of tools and equipment, explaining their choices;
- b select from a range of materials and components according to their functional properties and aesthetic qualities;
- c place the main stages of making in a systematic order;

Practical skills and techniques

- d learn to use a range of tools and equipment safely, appropriately and accurately and learn to follow hygiene procedures;
- e use a wider range of materials and components, including construction materials and kits, textiles and mechanical and electrical components;
- f with growing independence, measure and mark out to the nearest cm and millimetre;
- g cut, shape and score materials with some degree of accuracy;
- h assemble, join and combine material and components with some degree of accuracy;
- i demonstrate how to measure, cut, shape and join fabric with some accuracy to make a simple product;
- j join textiles with an appropriate sewing technique;
- k begin to select and use different and appropriate finishing techniques to improve the appearance of a product such as hemming, tie-dye, fabric paints and digital graphics.

KS2 Design and Technology National Curriculum

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 making.

Children select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.

They 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.

Children can:

Planning

- a independently plan by suggesting what to do next;
- b with growing confidence, select from a wide range of tools and equipment, explaining their choices;
- c select from a range of materials and components according to their functional properties and aesthetic qualities;
- d create step-by-step plans as a guide to making;

Practical skills and techniques

- e learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures;
- f independently take exact measurements and mark out, to within 1 millimetre;
- g use a full range of materials and components, including construction materials and kits, textiles, and mechanical components;
- h cut a range of materials with precision and accuracy;
- i shape and score materials with precision and accuracy;
- j assemble, join and combine materials and components with accuracy;
- k demonstrate how to measure, make a seam allowance, tape, pin, cut, shape and join fabric with precision to make a more complex product;
- l join textiles using a greater variety of stitches, such as backstitch, whip stitch, blanket stitch;
- m refine the finish using techniques to improve the appearance of their product, such as sanding or a more precise scissor cut after roughly cutting out a shape.

Evaluate	<p>KS1 Design and Technology National Curriculum</p> <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.</p> <p>Children explore and evaluate a range of existing products.</p> <p>They evaluate their ideas and products against design criteria.</p> <p>Children can:</p> <ul style="list-style-type: none"> a explore and evaluate existing products mainly through discussions, comparisons and simple written evaluations; b explain positives and things to improve for existing products; c explore what materials products are made from; d talk about their design ideas and what they are making; e as they work, start to identify strengths and possible changes they might make to refine their existing design; f evaluate their products and ideas against their simple design criteria; g start to understand that the iterative process sometimes involves repeating different stages of the process. 	<p>KS2 Design and Technology National Curriculum</p> <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.</p> <p>Children investigate and analyse a range of existing products.</p> <p>They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>They understand how key events and individuals in design and technology have helped shape the world.</p> <p>Children can:</p> <ul style="list-style-type: none"> a explore and evaluate existing products, explaining the purpose of the product and whether it is designed well to meet the intended purpose; b explore what materials/ingredients products are made from and suggest reasons for this; c consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; d evaluate their product against their original design criteria; e evaluate the key events, including technological developments, and designs of individuals in design and technology that have helped shape the world. 	<p>KS2 Design and Technology National Curriculum</p> <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.</p> <p>Children investigate and analyse a range of existing products.</p> <p>They evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>They understand how key events and individuals in design and technology have helped shape the world.</p> <p>Children can:</p> <ul style="list-style-type: none"> a complete detailed competitor analysis of other products on the market; b critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; c evaluate their ideas and products against the original design criteria, making changes as needed.
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KS1 Design and Technology National Curriculum

Children build structures, exploring how they can be made stronger, stiffer and more stable.

They explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Children can:

- a build simple structures, exploring how they can be made stronger, stiffer and more stable;
- b talk about and start to understand the simple working characteristics of materials and components;
- c explore and create products using mechanisms, such as levers, sliders and wheels.

KS2 Design and Technology National Curriculum

Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].

They apply their understanding of computing to program, monitor and control their products.

Children can:

- a understand that materials have both functional properties and aesthetic qualities;
- b apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;
- c understand and demonstrate how mechanical and electrical systems have an input and output process;
- d make and represent simple electrical circuits, such as a series and parallel, and components to create functional products;
- e explain how mechanical systems such as levers and linkages create movement;
- f use mechanical systems in their products.

KS2 Design and Technology National Curriculum

Children apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

They understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages].

They understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].

They apply their understanding of computing to program, monitor and control their products.

Children can:

- a apply their understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;
- b understand and demonstrate that mechanical and electrical systems have an input, process and output;
- c explain how mechanical systems, such as cams, create movement and use mechanical systems in their products;
- d apply their understanding of computing to program, monitor and control a product.

KS1 Design and Technology National Curriculum

Children use the basic principles of a healthy and varied diet to prepare dishes.

They understand where food comes from.

Children can:

- a explain where in the world different foods originate from;
- b understand that all food comes from plants or animals;
- c understand that food has to be farmed, grown elsewhere (e.g. home) or caught;
- d name and sort foods into the five groups in the Eatwell Guide;
- e understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why;
- f use what they know about the Eatwell Guide to design and prepare dishes.

KS2 Design and Technology National Curriculum

Children understand and apply the principles of a healthy and varied diet.

They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Children can:

- a start to know when, where and how food is grown (such as herbs, tomatoes and strawberries) in the UK, Europe and the wider world;
- b understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically;
- c with support, use a heat source to cook ingredients showing awareness of the need to control the temperature of the hob and/or oven;
- d use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking;
- e explain that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide and be able to apply these principles when planning and cooking dishes;
- f understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body;
- g prepare ingredients using appropriate cooking utensils;
- h measure and weigh ingredients to the nearest gram and millilitre;
- i start to independently follow a recipe;
- j start to understand seasonality.

KS2 Design and Technology National Curriculum

Children understand and apply the principles of a healthy and varied diet.

They prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.

They understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Children can:

- a know, explain and give examples of food that is grown (such as pears, wheat and potatoes), reared (such as poultry and cattle) and caught (such as fish) in the UK, Europe and the wider world;
- b understand about seasonality, how this may affect the food availability and plan recipes according to seasonality;
- c understand that food is processed into ingredients that can be eaten or used in cooking;
- d demonstrate how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source;
- e demonstrate how to use a range of cooking techniques, such as griddling, grilling, frying and boiling;
- f explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes;
- g adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma;
- h alter methods, cooking times and/or temperatures;
- i measure accurately and calculate ratios of ingredients to scale up or down from a recipe;
- j independently follow a recipe.