

Design and technology

Purpose of study

- design and make products that solve real and relevant problems within a variety of contexts
- become resourceful, innovative, enterprising and capable citizens
- develop a critical understanding of its impact on daily life and the wider world

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
- build and apply a repertoire of knowledge, understanding and skills
- 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.

Subject content Key stage 1

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and others users
- 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

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

Subject Content Key stage 2

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

- 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.

LONG TERM CURRICULUM OVERVIEW

| | | Autumn Term 2 | Spring Term 2 | Summer Term 2 |
|-------------|----------------|---|--|--|
| | | Textiles | Food Technology | Product Design and Engineering |
| KS1 | Cycle 1 | Puppet Project Cutting and joining techniques | Food for life – what do humans need to survive? Fruit and vegetables | Moving mechanisms Levers & sliders |
| | Cycle 2 | Bunting Project Cross stitch and applique | Who made it best? School dinners, past or present. Balanced Diet | Moving mechanisms Levers and linkages |
| LKS2 | Cycle 1 | Monster Teddy (keyring) Pattern templates and 3D structure | Vikings: The diet of conquerors Sensory Exploration | Moving mechanisms Basic pneumatics |
| | Cycle 2 | Drawstring Bag Block printing | What did they feed a Victorian child? Eating Seasonally | Moving mechanisms: Structure and pulleys |
| UKS2 | Cycle 1 | Graffiti Cushion Exploring decorative techniques (inclusive of stitch decoration) | Roman recipes: rich or poor? Dietary Considerations What could be healthier? | Moving mechanisms Cams |
| | Cycle 2 | Upcycle t-shirt/footwear Smart materials | Rationing: Wartime recipes Adapting a recipe | Moving mechanisms eco transport – DC motor, cams, pulleys, gears, wheels, axels, and pneumatics |

National Curriculum objectives for each strand of learning:

| | Design | Make | Evaluate | Technical Knowledge |
|-------------|--|--|---|---|
| K\$1 | <p>Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> | <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics</p> | <p>Explore and evaluate a range of existing products</p> <p>Evaluate their ideas and products against design criteria</p> | <p>Build structures, exploring how they can be made stronger, stiffer and more stable</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.</p> |
| K\$2 | <p>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>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>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately</p> <p>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> | <p>Investigate and analyse a range of existing products</p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>Understand how key events and individuals in design and technology have helped shape the world</p> | <p>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]</p> <p>Apply their understanding of computing to program, monitor and control their products</p> |

Cooking and Nutrition:

| K\$1 | K\$2 |
|---|---|
| <p>Use the basic principles of a healthy and varied diet to prepare dishes</p> <p>Understand where food comes from.</p> | <p>Understand and apply the principles of a healthy and varied diet</p> <p>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p> |

KS1 Cycle 1

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|--|--|--|
| Textiles – Puppet Project | Food Technology – Carrot and Banana Muffins | Product Design & Engineering – Pop up Card |
| <p>Use an existing template with support</p> <p>Understand what textiles are</p> <p>Can recognise felt and explain why it is suitable to use on a puppet</p> <p>Can independently cut a piece of thread (to the correct size) ready to sew</p> <p>Can sew a running stitch with support</p> <p>Can apply buttons to a puppet</p> <p>Use basic tools and equipment to cut and shape</p> <p>Use scissors, pins, glue and staples safely with support</p> <p>Understand basic rules when using a textiles room</p> <p>Cut out a basic shape on fabric with scissors with support (puppet template and features)</p> <p>Shape fabric using scissors</p> <p>Learning different ways to join fabrics together:</p> <ul style="list-style-type: none"> • Pinning • Gluing • Stapling • Straight stitch (with support) <p>Can list some of the stages of puppet making</p> <p>Students can state what product they are designing and making</p> <p>Students can explain who the product is for</p> <p>Can use an existing mood board to take inspiration</p> | <p>Count the quantity of food needed using whole numbers (e.g. 6 grapes, 2 carrots)</p> <p>With support, measure and weigh foods using non-statutory measures e.g. spoons, cups</p> <p>Recognise that we all need to eat to grow and be healthy</p> <p>Understand the difference between fruit and vegetables</p> <p>Be aware that we need to eat more of some foods and less of others</p> <p>With support, are able to eat sociably with others</p> <p>Understand the difference between fruit and vegetables</p> <p>Begin to understand that foods have to be farmed, grown elsewhere (e.g. home) or caught</p> <p>Know which animals or plants some foods come from</p> <p>With help, sprinkle, garnish on cold food (e.g. herbs, grated cheese)</p> <p>Understand that some foods need to be washed before they are safe to eat</p> <p>With help and supervision get ready to cook</p> <p>With help and supervision, take part in simple clearing up tasks such as clearing and cleaning the tables</p> <p>With help and supervision, put together cold ingredients</p> <p>With support, sift flour into a bowl</p> <p>Mix, stir and combine a small amount of cold ingredients in bowl</p> <p>Use the bridge hold to cut soft foods using a serrated vegetable knife</p> <p>Crush and mash cold food in a bowl (e.g. biscuits, bananas)</p> <p>Peel fruit using their hands</p> <p>Tear food to divide it (e.g. fresh herbs, lettuce leaves)</p> <p>Begin to drain away liquids from packaged foods using a sieve or colander</p> <p>Can prepare food for baking with help, such as greasing a baking tray, putting cake cases into a bun tray</p> <p>Can list some of the stages of making</p> <p>Students can state what product they are designing and making</p> <p>With support, can use a basic word bank descriptor to identify the texture and/or appearance of a product</p> <p>Can taste their final products and describe what they like and dislike</p> <p>Can identify the taste of basic ingredients, using simple words (e.g. salty, sweet)</p> <p>Understand that recipes provide instructions on how to make food</p> | <p>Can recognise moving objects</p> <p>Can use vocabulary: up and down and start to use horizontal and vertical to describe movement</p> <p>Understand what a mechanism is</p> <p>Start to understand stand-alone mechanisms (methods for making things move)</p> <p>Can recognise a lever and slider</p> <p>Understand that levers and sliders are mechanisms and can make things move</p> <p>Understand the terms 'levers' and pivots'</p> <p>Can identify the direction of movement in a sliding mechanism</p> <p>Can begin to investigate different ways of making sliders</p> <p>With support, understand how to create a sliding movement</p> <p>Can create simple movements (up, down, along, and around)</p> <p>Can create simple levers and sliders to make a moving model</p> <p>Can make a stable structure from card, tape and glue</p> <p>Can follow instructions to cut and assemble supporting structure together</p> <p>Can test if a structure is strong and stable</p> <p>Can recognise a pivot</p> <p>With support, can create a pivot(s)</p> <p>With support, cut out basic shapes with paper scissors</p> <p>With support, can use an existing basic template</p> <p>Can join basic shapes together using glue</p> <p>Use basic tools and equipment to cut and shape</p> <p>Use equipment safely with support</p> <p>Can list some of the stages of making</p> <p>Can state what product they are designing and making</p> <p>Can explain who the product is for</p> <p>Can use an existing mood board to take inspiration</p> <p>Draw simple design ideas</p> <p>Basic labelling of design ideas with design features – colour choice, illustrate direction of movement, theme.</p> <p>Describe likes/dislikes for each design idea</p> <p>Can describe what their products are for</p> <p>Can describe what they like and dislike</p> <p>Can begin to talk about changes made during the making process</p> |

KS1 Cycle 2

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|---|--|--|
| Textiles – Bunting Project | Food Technology – Packed Lunch | Product Design & Engineering - Moving bookmark |
| <p>Use an existing template to draw a triangle on to felt</p> <p>Apply safety pins to secure the template in place on the fabric</p> <p>Understand where textiles be found in the home</p> <p>Understand the function of basic fabrics</p> <p>Can use more than 1 fabric</p> <p>Understand what a fastening is</p> <p>Apply a cross stitch to a product</p> <p>Can thread a needle with support</p> <p>Can identify parts of a needle (point and eye)</p> <p>Can create an applique (glued or simple stitches)</p> <p>Can use cross stitch as a form of decoration</p> <p>Name and use basic tools and equipment to cut, shape, join and finish</p> <p>Name and explain the function of basic tools and equipment and explain choices</p> <p>Use scissors, needle, thread, and safety pins safely with some support</p> <p>Neatly cut out simple fabric shapes with scissors</p> <p>Join fabric using fabric glue or stitching</p> <p>Identifying benefits of these techniques</p> <p>Understand that a 3D structure can be made from two identical fabric shapes</p> <p>Order main stages of making</p> <p>Students can describe what product they are designing and making</p> <p>Students can describe what the product is for and how it will work</p> <p>Students will be able to explain how they can make their product suitable for their intended\ user</p> <p>Can produce a basic mood board using images from clipart, to represent chosen theme</p> | <p>Measure and weigh foods using non-statutory measures e.g. spoons, cups</p> <p>Understand that we all need a balanced diet to be healthy and active and need to eat more or less of different foods</p> <p>Begin to understand what makes a balanced diet</p> <p>Know that everyone should eat at least five portions of fruit and vegetables every day</p> <p>Begin to recognise the Eatwell plate and list some of its groups</p> <p>Understand how fruit and vegetables grow</p> <p>Aware that some food packaging has labels giving information</p> <p>Understand the importance of not wasting food and know how to recycle packaging</p> <p>With guidance, use a tablespoon to serve cold food into bowls or plates</p> <p>With guidance, pour or drizzle dressing on to salads</p> <p>Lightly sprinkle garnish on cold food (e.g. herbs, grated cheese)</p> <p>Can follow basic food safety rules when preparing and cooking food</p> <p>With supervision take part in simple clearing up tasks</p> <p>With supervision get ready to cook</p> <p>Understand how everyday foods are stored differently to ensure they are safe to eat, (e.g. fridge or freezer)</p> <p>With physical guidance and supervision, use a small table knife for spreading soft spreads on to bread</p> <p>Use hands to shape dough into small balls or shapes</p> <p>With help and supervision, assemble and arrange cold ingredients (e.g. sandwich, fruit kebabs, bruschetta)</p> <p>Sift flour into bowl</p> <p>Mix, stir and combine liquid and dry ingredients (e.g. muffins)</p> <p>With support, use hands to rub fat into flour (e.g. rock buns)</p> <p>With support, crack an egg and beat together using a folk</p> <p>With close supervision and physical guidance where necessary, know how to:</p> <p>Grate soft food, using a grater (e.g. cheese)</p> <p>Use a melon baller to core an apple</p> <p>Peel harder food</p> <p>Peel soft vegetables using a peeler (e.g. cucumber)</p> <p>Mash cooked food (e.g. potatoes with a masher)</p> <p>Use the claw grip to cut soft foods using a serrated vegetable knife</p> <p>Use the bridge hold to cut harder foods using a serrated vegetable knife</p> <p>Order main stages of making</p> <p>Students will be able to explain how they can make their product suitable for their intended\ user</p> | <p>Can identify and list a range of products that move</p> <p>Can identify what mechanism makes a toy move forward</p> <p>Describe what a mechanism is</p> <p>Understand stand-alone mechanisms (methods for making things move)</p> <p>Can identify a lever, linkage and pivot and describe each purpose</p> <p>Can identify the direction of movement of some basic mechanisms</p> <p>Can identify the name of a basic mechanism found in everyday objects</p> <p>Start to understand that there is an input and output in a mechanism</p> <p>Can create a moving prototype by making a linkage using card for levers and split pins for pivots</p> <p>Can begin to experiment with linkages, adjusting the widths, lengths and thicknesses of card used</p> <p>Can describe the difference between a loose pivot and a fixed pivot</p> <p>Can create joints and structures from paper, card and tape</p> <p>Understand the purpose of structures</p> <p>Can explore the features of structures</p> <p>Can compare the stability of different shapes</p> <p>Can test the strength of their prototype</p> <p>Can start to identify the strongest and weakest part of a structure</p> <p>Can independently create a pivot using split pins</p> <p>With some support, can create a linkage by using an existing template</p> <p>Neatly cut out simple templates / shapes with paper scissors</p> <p>Can independently place loose pivots through the arms into a pull lever</p> <p>Can apply stoppers and guides to a lever and component to control its movement</p> <p>Name and use basic tools and equipment to cut, shape, join and finish</p> <p>Name and explain the function of basic tools and equipment and explain choices</p> <p>Use equipment safely with some support</p> <p>With some support, can use a hole punch to make holes for the split pins</p> <p>Order main stages of making</p> <p>Can describe what product they are designing and making</p> <p>Students can describe what the product is for and how it will work</p> <p>Will be able to explain how they can make their product suitable for their intended\ user</p> <p>Label design ideas based on design brief – colour choice, direction of movement, theme, how it will appeal to its intended user</p> <p>Describe likes/dislikes and why for each design idea</p> <p>Can describe what their products are for and how they will work</p> <p>Select suitable linkage systems to produce the desired motions</p> <p>Can describe likes and dislikes.</p> <p>Can provide a suggestion of how the final product could be further improved</p> <p>Can talk about changes made during the making process</p> |

LK\$2 Cycle 1

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|--|--|--|
| Textiles – Teddy Monster Keyring | Food Technology – Bread & Scotch Broth | Product Design & Engineering – Moving Monsters |
| <p>Understand the function of templates Adapt an existing template Independently apply safety pins to the template to secure against the fabric before applying a pencil to trace Understand the benefit of using safety pins Can list different types of natural textiles Can explain the functional properties of basic natural fabrics (cotton etc.) Can provide some examples of simple fastenings Can thread a needle with some support and describe how to apply a knot with support Recognise different types of stitch Can apply more than 1 type of hand stitching Can sew a running stitch, with evenly spaced, neat, even stitches to join fabric Can apply a reverse applique Able to sew embellishments with support (sequins, beads, ribbon etc.) Name and use a range of tools and equipment to cut, shape, join and finish Select the appropriate tools and explain choices Understand the function of tailors' chalk and weights Can identify hazards in a classroom and provide examples of rules to mitigate accidents Cut a more complex shape with some accuracy using fabric shears Cut out a pattern template with some accuracy with scissors Can apply a blanket stitch to join fabric with some accuracy. Understand the difference between 2D and 3D Can create a 3D structure from two identical fabric shapes Can use wadding Produce a basic plan of making Can gather basic information about the needs and wants of particular individuals or groups Can describe the purpose of their product</p> | <p>With support, begin to use a jug to measure liquids With support, begin to use weighing scales to measure and weigh ingredients Know the five food groups Begin to refer to some of the groups within the Eatwell plate Understand the importance of keeping hydrated Begin to understand appropriate portion sizes for regular meals and healthy snacks Know that vegetables and fruit grow in certain seasons Begin to be able to read and understand food labels Understand that there are a variety of influences on the food we choose to eat (e.g. who we are with, season, health, occasion) With support, use spoons or jugs to serve portions of food or drinks into cups, plates or bowls Has a basic understanding of what a portion is Can describe basic food safety rules Know how to get ready to cook With guidance follow procedures for clearing up Understand how a variety of foods are stored differently to ensure they are safe to eat (e.g. fridge or freezer) Knead and shape dough into evenly sized shapes With some support, use a rolling pin to flatten and roll out dough Sieve flour, raising agents and/or spices together into a bowl With some support, mix, stir and combine wet and dry ingredients uniformly (e.g. to form a dough) With some support, crack an egg and beat with balloon whisk Grate harder food using a grater (eg apples, carrots) Begin to peel harder food (eg apple, potato) Begin to use the claw grip to cut harder foods using a serrated vegetable knife (e.g. carrot) Begin to use both the bridge hold and claw grip to cut the same food using a serrated vegetable knife (e.g. onion) With very close supervision, and physical guidance when necessary, understand how to handle hot food safely Produce a basic plan of making With support, can taste and evaluate their final dishes against a basic specification. Students can identify both good and bad features of their final practical outcome and provide a suggestion to further improve it, using basic client feedback to influence their suggestion. Understands that a recipe can be adapted</p> | <p>Can describe the meaning of movement and identify examples of objects which move in different directions e.g. a train, a rollercoaster, a swing Can identify what movement different objects will make (e.g. clock) Can provide some basic examples of mechanisms Start to understand what a mechanical system is and the difference between a stand-alone mechanism and mechanical, beginning to connect simple mechanisms together Can recognise familiar objects that use air to make them work Can describe how the objects use air to make them work Understand that there is an input and output in a mechanism (input is the motion used to start a mechanism. An output is the motion that happens as a result of starting the input) Understand that pneumatic systems force air over a distance to create movement Can produce a simple pneumatic system to create a desired motion through using syringes and balloons Can identify mechanisms in everyday objects Know that mechanisms control movement Can create a strong and stiff structure by folding card Learn about different types of structures, found in the natural world and in everyday objects Start to recognise electronic components and a simple circuit Understand that they could use electronic components/circuit within their Moving Monster to automate (show visual Moving Monster exemplar with automation Can manipulate materials to create different effects by cutting, creasing, folding and weaving Produce a basic plan of making Can describe the purpose of their product Label all design ideas with design features – colour choice, how particular part of their products work, direction of movement, theme, reference to material, can describe the purpose of the product and how it will appeal to its intended user Basic reference to some of the specification points against design ideas Students can identify both good and bad features of their final practical outcome and provide a suggestion to further improve it, using basic client feedback to influence their suggestion.</p> |

LK\$2 Cycle 2

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|---|--|---|
| Textiles – Drawstring Bag | Food Technology – Eating Seasonally | Product Design & Engineering – Crane |
| <p>Design and make a basic shaped template and understand the need for a seam allowance</p> <p>Use pins to secure the template in place with some support</p> <p>Label all templates</p> <p>Can list different types of manmade textiles</p> <p>Can describe both the functional and aesthetic properties of manmade fabrics</p> <p>Can work with a combination of materials to produce a product</p> <p>Understanding that there are different types of fastenings and what they are (buttons, poppers, zip, Velcro etc.)</p> <p>Can articulate the advantages and disadvantages of different fastening types</p> <p>Apply a drawstring and eyelets to a bag</p> <p>Can thread a needle and apply a knot with greater independence</p> <p>Can name different stitch types and use these where appropriate - e.g. blanket for added structure/reinforced</p> <p>Can apply blanket stitch so the space between the stitches are even and regular</p> <p>Can tack two pieces of cloth together with some support</p> <p>Can provide an advantage of tacking</p> <p>Can create a template to create a block print</p> <p>Can create a pattern on to fabric by applying tie dye</p> <p>Can select an appropriate embellishment to develop the aesthetic appearance of a drawstring bag</p> <p>Select the appropriate tools and justify choice with an example</p> <p>Can independently apply tailors chalk around a template and can explain its benefits when using in a design studio</p> <p>Safely use fabric weights and explain the benefit</p> <p>Cut shapes accurately with fabric shears</p> <p>Cut out a pattern template with greater accuracy</p> <p>Development of straps – reinforced</p> <p>Understand the need for a seam allowance</p> <p>Use a backstitch to join fabric</p> <p>Understand that sewing with double thread will make seams stronger</p> <p>Can produce a plan of making with the correct tools listed</p> <p>Can gather a range of information about the needs and wants of particular individuals or groups</p> <p>Can develop a design criterion based on the design brief</p> <p>Indicate the design features that will appeal to their intended use</p> | <p>Use weighing scales to measure and weigh ingredients</p> <p>Can list what makes a healthy and balanced diet, and that different foods and drink, provide different substances the body needs to be healthy and active (e.g. carbs for energy)</p> <p>Understand and provide suggestions of food groups served together to make a balanced meal through design ideas and planning</p> <p>Understand how to adapt a recipe to make it healthier</p> <p>Understands that food is grown, reared and caught in the UK, Europe and the wider world</p> <p>Provide examples of vegetables and fruit that grow in certain seasons</p> <p>Can describe some of the important features on food labels to inform decisions</p> <p>Know a variety of influences on the food we choose to eat (eg who we are with, season, health, occasion)</p> <p>Use spoons or jugs to serve portions of food or drinks into cups, plates or bowls</p> <p>Can provide a simple justification for safety, including following basic food safety rules with some independence</p> <p>Can briefly describe that bacteria in food can cause food poisoning or food to go mouldy (introduction to contamination)</p> <p>Knead and shape dough into consistently even sized shapes</p> <p>Use a rolling pin to flatten and roll out dough</p> <p>With greater confidence independently combine dry ingredients into a bowl</p> <p>With greater confidence, mix, stir and combine wet and dry ingredients uniformly (e.g. to form a dough)</p> <p>Crack an egg and beat with balloon whisk</p> <p>Cream fat and sugar together using a mixing spoon, ensuring it comprises of a smooth texture</p> <p>Begin to dice foods</p> <p>Use the claw grip to cut harder foods using a serrated vegetable knife</p> <p>Use both the bridge hold and claw grip to cut the same food using a serrated vegetable knife (e.g. onion)</p> <p>With supervision, use a toaster or microwave safely (e.g. beans on toast)</p> <p>Can produce a plan of making with the correct tools listed</p> <p>Can gather a range of information about the needs and wants of particular individuals or groups</p> <p>Can develop a design criteria based on the design brief</p> <p>Students can identify a range of strengths and areas to develop within their final outcome through tasting, evaluate and refine their ideas and dishes against a specification, taking account the views of others to improve their work.</p> | <p>Know there are 4 different types of movement</p> <p>Can identify the names of at least 1-2 different types of movement</p> <p>Start to understand that types of motion can be converted from one type to another using mechanisms</p> <p>With support, can convert one type of motion to another</p> <p>Understand what a mechanical system is, connecting mechanisms together</p> <p>Can start to combine a range of mechanisms together to make a prototype</p> <p>Can begin to name each mechanism, input and output correctly (input is the motion used to start a mechanism. An output is the motion that happens as a result of starting the input)</p> <p>Can create a simple pulley system to move a load</p> <p>Can identify what stops wheels from turning and understands that a wheel needs an axel in order to move</p> <p>Understand how an axel works / understand that axels are used in mechanisms to make parts turn in a circle</p> <p>Can incorporate a wheel and axel within a product</p> <p>Understand the definition and importance of strength, stability and stiffness</p> <p>Design a stable structure that is able to support weight</p> <p>Can select appropriate materials to build a strong structure</p> <p>Create a frame structure, using triangulation</p> <p>Can produce a plan of making with the correct tools listed</p> <p>Sketch a range of creative design ideas, drawing on prior research</p> <p>Designs meet a range of needs based on the design brief, including being fit for purpose</p> <p>Label all design ideas with design features – colour choice, how particular part of their products work, direction of movement, theme, material choice with justification, can clearly describe the purpose of the product and how it will appeal to its intended user</p> <p>Students can identify a range of strengths and areas to develop within their final outcome against most specification points</p> <p>Taking account the views of others to improve their work.</p> |

UK\$2 Cycle 1

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|---|--|--|
| Textiles – Graffiti Cushion | Food Technology – Roman Feast | Product Design & Engineering – Cam |
| <p>Draw an appropriate template shape with accuracy and keeping with the design criteria</p> <p>Use pins to secure templates in place with greater independence</p> <p>Independently label all features of the cushion – name of part, quantity etc.</p> <p>Identify the names of combined fabrics (e.g. polycotton)</p> <p>Identify some properties of blended fabrics</p> <p>Can distress a range of fabrics to develop its aesthetic appearance</p> <p>Apply button and buttonholes</p> <p>Can describe suitable fastenings to different products</p> <p>Can thread a needle and apply a knot independently</p> <p>Can apply a range of decorative stitching</p> <p>Understand and recognise the difference between hand sewing and machine sewing</p> <p>Understand the difference between temporary (tacking) and permanent stitching</p> <p>Can tack two pieces of cloth together independently and justify its purpose in greater depth</p> <p>Can colour fabrics using a range of techniques such as:</p> <ul style="list-style-type: none"> • Tie dye • Fabric pens and fabric paint • Heat transfer printing (CAD) • Patch work/quilting • Block print <p>Can select and apply a range of appropriate embellishments</p> <p>Awareness of environmental impact of some decorative applications (e.g. use of dye)</p> <p>Name and select appropriate tools and use them with precision e.g. fabric shears, fabric weights</p> <p>Cut safely and accurately to a marked line using fabric shears</p> <p>Independently cut out a pattern template with accuracy, ensuring the 15mm seam allowance is not removed</p> <p>Use a glue gun with one to one supervision</p> <p>Can combine a range of fabric swatches/shapes together to create a cloth</p> <p>Can use padding/wadding to transform a 2D product to a 3D outcome</p> <p>Understand the meaning of quality control and assurance</p> <p>Can produce a descriptive plan of making for each stage, including a list of tools, equipment and materials needed for the product</p> <p>Carry out research using questionnaires to gather information</p> <p>Identify the needs and wants of a particular individual or group</p> <p>A minimum of 3 sources of research to create an inspirational 3D mood board</p> | <p>Accurately use a jug to measure liquids</p> <p>Accurately use weighing scales to measure and weigh ingredients</p> <p>With greater confidence can describe the 5 food groups, providing multiple examples of foods for each of the categories</p> <p>Can describe with clear examples, what constitutes a balanced diet</p> <p>Recognise and understand some nutrients that contribute to a healthy and balanced diet</p> <p>Students can confidently explain the function of the Eatwell plate.</p> <p>Understand how to adapt a recipe within a given budget</p> <p>Can describe what a dietary consideration is and give examples of types of diets</p> <p>With support, are able to design, plan and serve a simple balanced cooked meal (e.g. pizza and salad, soup and bread rolls)</p> <p>With supervision, be able to use a spoon, ladle or jug to serve hot liquids</p> <p>Cut food into equal sized portions for the number being served</p> <p>Demonstrate food safety practices when getting ready to store, prepare and cook food</p> <p>Know, and can follow, food safety rules and understand their purpose</p> <p>Can independently follow procedures for clearing up</p> <p>Can describe where to store different food groups to reduce risk</p> <p>Knead and shape dough into a variety of shapes</p> <p>Use hands to shape mixtures into evenly sized pieces (e.g. burgers)</p> <p>Use a rolling pin to roll out dough to a specific thickness (e.g. pizza)</p> <p>Assemble, arrange and layer more advanced dishes (e.g. apple sponge pudding, shepherd’s pie)</p> <p>Sieve wet and dry ingredients with precision</p> <p>Confidently crack an egg</p> <p>Use fingertips to rub fat into flour to make fine ‘breadcrumbs’ (e.g. apple crumble)</p> <p>With support, whisk using an electric hand mixer (e.g. eggs)</p> <p>Use both the bridge hold and claw grip to cut food using a serrated vegetable knife (e.g. onion)</p> <p>Peel harder food using a peeler (e.g. apple, potato)</p> <p>Dice foods and cut them into evenly sized (e.g. garlic, vegetable batons, herbs)</p> <p>Finely grate hard foods (e.g. zesting, parmesan cheese)</p> <p>With support, use a can opener and open ring-pull tins</p> <p>With support and supervision, students can begin to use the hob</p> <p>Can produce a descriptive plan of making for each stage, including a list of tools, equipment and materials needed for the product</p> <p>Carry out research using questionnaires to gather information</p> <p>Identify the needs and wants of a particular individual or group</p> <p>Can sketch a suggested improvement based on feedback</p> <p>Understands combining ingredients can change the functional and aesthetic quality of a product</p> | <p>Can list the names of each of the 4 different types of movement and provide a diagram representing each:</p> <ul style="list-style-type: none"> • Linear • Reciprocating • Rotary • Oscillating <p>With some support, can convert one type of motion to another</p> <p>Can connect a range of mechanical systems together</p> <p>Know how to convert one type of motion to another</p> <p>Can name and identify each mechanism, input and output correctly</p> <p>Understand that a cam mechanism is a linkage system which has a follower to convert rotary movement (moving round and round) to linear movement (up and down)</p> <p>Can understand that different shaped cams produce varying movement</p> <p>Can name more than 1 type of cam</p> <p>Using layers and spacers to construct a page</p> <p>Can use layers and spacers to hide the workings of the mechanical parts for an aesthetically pleasing result an identity and label circuit symbols and circuit diagrams</p> <p>Know the key components used to create a functioning circuit</p> <p>Begin to understand the difference between school and industry manufacturing processes</p> <p>Can create a simple template by applying geometric shapes</p> <p>Can independently measure and mark material accurately</p> <p>Can produce a descriptive plan of making for each stage, including a list of tools, equipment and materials needed for the product</p> <p>Develop a specification based on ACCESSFM</p> <p>Carry out research using questionnaires to gather information</p> <p>Identify the needs and wants of a particular individual or group</p> <p>Can use a basic tools on CAD to apply the aesthetics to a design</p> <p>Can create a 3D mock-up prototype before the final manufacture</p> <p>Can make reference to the quality of the design, manufacture and fitness for purpose</p> |

UK\$2 Cycle 2

| Autumn 2 | Spring Term 2 | Summer Term 2 |
|--|--|--|
| Textiles – Upcycling t-shirt/shoe | Food Technology – Great British Dish | Product Design & Engineering – Eco-car |
| <p>Design and make an appropriate template(s) using CAD and include a dart (if necessary) and include a 15mm seam allowance with precision</p> <p>Have a basic understanding of tessellation in the world of work</p> <p>Understand the difference between synthetic v natural textiles</p> <p>Understand why some fabrics are combined for added qualities</p> <p>Select appropriate textiles and explain choice by referring to both its aesthetic and functional properties</p> <p>Can select and apply appropriate fastenings to a garment</p> <p>Can select appropriate stitching to the product, considering both functional and aesthetic purposes – e.g. functional application of additional structure/strength (blanket stitch, hem etc)</p> <p>Tying strong knots</p> <p>Can sew accurately with even regularity of stitches</p> <p>Can set up sewing machine ready to sew (with supervision)</p> <p>Can identify some of the benefits of machine stitching – both for a product and batch production (accuracy, labour – speed etc.)</p> <p>List and identify some smart materials</p> <p>Understand the function of some smart materials</p> <p>Can apply a smart material with some support</p> <p>Can select and apply different types of decorative stitches and embellishments</p> <p>Environmental considerations within product design</p> <p>Understand more complex tools (sewing machine) including H&S</p> <p>Use relevant tools and equipment with increasing accuracy and independence</p> <p>Can describe the rules and justify each point with an example (e.g. hold scissors the correct way in the palm of a hand because...)</p> <p>Can identify cloth that has been overlapped and its purpose</p> <p>Use a glue gun with close supervision</p> <p>Join materials, using the most appropriate method for the materials or purpose</p> <p>Can select appropriate stitching which enhances the functional properties of a product e.g. backstitch, blanket stitch, overlock)</p> <p>Understand the need for both quality control and quality assurance measures in industry</p> <p>Complete a detailed plan of production (using appropriate symbols e.g. diamond for a question etc.) for each stage of making which includes QA/QC measures</p> <p>Develop a detailed design specification based on ACCESSFM</p> <p>Carry out research using surveys, interviews and the web to inform design ideas</p> <p>Students’ can use the data from their research, to identify the needs, wants, preferences and values of the client</p> | <p>Measure and weigh a range of ingredients with precision Can confidently describe and justify with examples, the purpose of the Eatwell plate.</p> <p>Know the main food groups and can identify nutrients provided within each category</p> <p>Can confidently adapt a recipe to make it healthier</p> <p>Can compare two adapted recipes using a nutritional calculator and then identifying the healthier option</p> <p>Can explain some dietary considerations and use this to adapt a meal</p> <p>Are able to plan and serve a healthy, balanced and affordable cooked meal</p> <p>Understanding where food comes from, describing the process of ‘Farm to Fork’ for a given ingredient</p> <p>Understand that seasons may affect the food available.</p> <p>Understand social influences on the food we choose to eat (e.g. media, peer pressure, ethics)</p> <p>Sieve wet and dry ingredients with precision</p> <p>Use fingertips to rub fat into flour to make consistent fine ‘breadcrumbs’ (e.g. apple crumble)</p> <p>With supervision, cream fat and sugar together using an electric hand mixer</p> <p>Select the most appropriate cutting method (claw / bridge etc for particular foods)</p> <p>With support and supervision, students can use the hob</p> <p>With supervision, handle hot food safely, through selecting appropriate equipment to safely remove cooked food from a baking tray on to a cooling rack</p> <p>Understand the need for both quality control and quality assurance measures in industry</p> <p>Complete a detailed plan of production (using appropriate symbols e.g. diamond for a question etc.) for each stage of making which includes QA/QC measures</p> <p>Students’ can use the data from their research, to identify the needs, wants, preferences and values of the client</p> <p>Can confidently and independently select and use a range of word bank descriptors to describe the texture, appearance, taste, aroma and nutrition of a product</p> <p>Can taste, evaluate and refine their ideas and dishes against a detailed specification, carefully using the views of others to improve their work.</p> <p>Adapt a recipe based on research</p> <p>Can adapt recipes to change appearance, taste, texture and aroma</p> <p>Can write/adapt a recipe, explaining the key steps, method and ingredients and use the correct quantities of each ingredient, working to a given timescale and budget</p> <p>Understand a recipe can be adapted by adding/substituting ingredients</p> <p>Understands that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients</p> <p>Can design an appealing package to reflect a recipe. Can include the legal and no- legal requirements displayed on a food package.</p> | <p>Can confidently describe the movement of:</p> <ul style="list-style-type: none"> • Linear • Reciprocating • Rotary • Oscillating <p>Can confidently identify the types of movement for different products/objects e.g.:</p> <ul style="list-style-type: none"> • Train • Clock pendulum <p>Can explain all moving things have kinetic energy</p> <p>Can confidently create a wide range of mechanisms</p> <p>Can make things move at the same time</p> <p>Can confidently describe an input and output</p> <p>Understand that different shaped cams produce different follower movements</p> <p>Explore types of motion and direction of a motion</p> <p>Understand how linkages change the direction of a force</p> <p>Can confidently turn 2D nets into 3D structures</p> <p>Understand how to reinforce a net to add strength</p> <p>Can select appropriate materials to build a stronger structure</p> <p>Can adapt and improve a structure by identifying areas of weakness and reinforcing them</p> <p>Can create a simple DC motor</p> <p>Can create a simple circuit to make a flashing light</p> <p>Know terminology of insulator, conductor, L.E.D, battery, coin cell batteries</p> <p>Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles</p> <p>Can measure, mark and cut timber safely with increasing precision using both a jig and junior hacksaw</p> <p>Generate a broad range of innovate design concepts, clearly drawing on primary and secondary research</p> <p>Designs clearly meet the needs of a particular individual or groups of people</p> <p>Descriptive reference to all specification points against design ideas</p> <p>Can draw an orthographic drawing/ exploded diagram and/or cross-sectional drawings of their final design</p> <p>Can use a range of tools on CAD to apply the aesthetics to a design</p> <p>Students can describe and justify a range of strengths and areas to develop within their final outcome against the specification</p> <p>Carefully using the views of themselves and others to improve their work.</p> <p>Can make clear reference to the quality of the design, manufacture and fitness for purpose</p> <p>Can provide a labelled sketch of further modification, using intended user feedback to direct/influence changes.</p> |

