



# Blacko Primary School

*Be Respectful. Be Collaborative. Be Ambitious.*

## Design Technology Curriculum

EYFS	<p><b>EYFS Expressive Arts and Design early learning goal.</b></p> <p>During their time in early years, children will have used and explored a variety of materials, tools and techniques which allow them to experiment with design, texture, form function. They will have engaged with designing, making and evaluating in a way that develops their cutting and joining techniques, as well as their ability to modify and adapt their work. These skills, knowledge and experiences underpin the learning that takes place in Year 1 and across the KS1 and KS2 curriculum.</p>				
	Creation Station	Construction Kits	Kitcamp	Crates, den building and boxes	Playdough
	<p>Available in the classroom in continuous provision. Mixture of adult-led and child-led activities happen here. A range of supplies to make, improve and enhance creations are readily available.</p> <p><u><i>Vocabulary: creation, design, plan, make, tape, ideas, scissors, like, don't like</i></u></p>	<p>Available in the classroom in continuous provision. From small wooden blocks, Duplo to Kapla and Lego. Usually (but not only) to make imaginative structures and buildings.</p> <p><u><i>Vocabulary: imagination, plan, make, build, ideas, like, don't like</i></u></p>	<p>Kitcamp is a loose parts resource that offers children many inspirational and playful learning opportunities. Through construction and playing children can develop their spatial awareness skills and get physically active by building and negotiating their play environments. Children learn to work as a team, negotiating to build their own environments and acting out scenarios within these environments. Kitcamp encourages social interaction and role play, stimulating executive function development in children.</p> <p><u><i>Vocabulary: Kitcamp, build, make, like, don't like</i></u></p>	<p>Available outside in continuous provision. To particularly support gross motor construction, offering versatility and open-ended opportunities.</p> <p><u><i>Vocabulary: imagination, plan, make, ideas, boxes, building, crate, like, don't like</i></u></p>	<p>Available in the classroom in continuous provision. A range of small handheld equipment to manipulate the dough into a range of imaginative sculptures. Children use playdough already made and sometimes help an adult to make it. Children will be offered a range of sensory experiences, expressing and representing ideas that they can use to support play.</p> <p><u><i>Vocabulary: playdough, make, like, don't like</i></u></p>



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	Autumn Term	Spring Term	Summer Term
Year 1	<p><b>Textiles – Weaving</b></p> <p><i>National Curriculum objectives:</i>            Explore and evaluate a range of existing products 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 Select from and use a range of tools and equipment to perform practical tasks.            Select from and use a wide range of materials and components according to their characteristics.            Evaluate their ideas and products against design criteria.</p> <p><u>Vocabulary: design, weave(ing), evaluate, woven, pattern, equipment, material, ideas, change, choose, select, mark out, join, decorate, finish</u></p>	<p><b>Mechanical Systems – Linkages</b></p> <p><i>National Curriculum objectives:</i>            Explore and evaluate a range of existing products 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 Select from and use a range of tools and equipment to perform practical tasks            Select from and use a wide range of materials and components according to their characteristics.            Evaluate their ideas and products against design criteria <b>Technical knowledge:</b> explore and use mechanisms in their product</p> <p><u>Vocabulary: mechanism, link, linkage, pivot, ideas, design, practise, change, choose, select</u></p>	<p><b>Food Technology – Preparing Fruits and Vegetables</b></p> <p><i>National Curriculum objectives:</i>            Use the basic principles of a healthy and varied diet to prepare dishes            Understand where food comes from.            Design appealing food products for themselves and other users based on design criteria            Generate, develop, model and communicate their ideas through talking and drawing            Select from and use a range of tools and equipment to perform practical tasks            Select from and use a range of ingredients according to their characteristics            Evaluate their ideas and products against design criteria</p> <p>* peeling            * chopping            * slicing</p> <p><u>Vocabulary: peeling, chopping, slicing, fruit, ripe, diet, texture, flavour, ideas, design, practise, change, ingredients, resources, choose, select, healthy</u></p>



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	<p><b>Explore</b> Vocab to introduce and use with the children: <i>design, weave/weaving, evaluate.</i> Children evaluate a range of woven products on the market that have been created using a large weave. Discuss how they have been made – can the children see the ‘over/under’ pattern?</p> <p><b>Develop ideas</b> - Skills lesson: introduce and practice the technique of ‘over/under’ weaving using a selection of materials, evaluating the effectiveness of each.</p> <p><b>Design</b> Children draw and colour their design for a placemat, labelling with their chosen material.</p> <p><b>Make</b> Make their woven placemat according to their design criteria, selecting appropriate tools, equipment and material.</p> <p><b>Evaluate</b> Evaluate their finished product against their design (criteria and labelled drawing)</p>	<p><b>Explore</b> Vocab to introduce and use with the children: <i>mechanism, link/linkage, pivot</i> Children investigate the effect of pushing and pulling a range of pre-made linkages and the related output/ movement, discussing ideas for images that could be put on the end (output) of the linkage</p> <p><b>Develop ideas</b> - Skills lesson – use strips of various materials and split pins to practise creating their own simple linkages that give a range of movement output, evaluating the effectiveness of each.</p> <p><b>Design</b> Children draw, colour and label their design for a greetings card that incorporates a linkage –</p> <p><b>Make</b> Make their greetings card according to their design criteria:</p> <p><b>Evaluate</b> Evaluate their greetings card against their design (criteria and labelled drawing)</p>	<p><b>Health and Nutrition</b> Vocab to introduce and use with the children: <i>fruit, ripe, peel, slice, chop</i> Introduce food groups/healthy and varied diet by zooming into fruits, including how and where they grow.</p> <p><b>Develop ideas</b> Explore a selection of fruits in terms of colour, shape, texture, flavour Practise peeling, slicing, chopping</p> <p><b>Design</b> Create a list of chosen fruits for their fruit salad. Draw a labelled exploded diagram of their design</p> <p><b>Make</b> Make their fruit salad according to their chosen list of ingredients and following food hygiene procedures.</p> <p><b>Evaluate</b> Evaluate their fruit salad against their design in terms of presentation and taste. With support, suggest adaptations or improvements.</p>
<p><b>Possible Resources</b></p>	<p>Books and other products with weaving examples. Card/card board, weaving template and patterns Masking tape, tape, stick glue Long fabric strips, wool, different materials Left/right-handed scissors, cutting mats, finishing media and materials</p>	<p>Books and other products with lever and linkage mechanisms Lever and linkage teaching aids card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue Left/right-handed scissors, cutting mats, card drill, finishing media and materials</p>	<p>Range of fresh fruit and vegetables Chopping boards, knives, peelers, graters, skewers, juicers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities Yogurt making machine or blender, if appropriate</p>



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	Autumn Term	Spring Term	Summer Term
Year 2	<p><b>Structures – Marble Run</b></p> <p><u>National Curriculum objectives:</u>  <i>Explore and evaluate a range of existing products 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 Select from and use a range of tools and equipment to perform practical tasks</i>  <i>Select from and use a wide range of materials and components according to their characteristics</i>  <i>Evaluate their ideas and products against design criteria</i> <b>Technical knowledge:</b> build structures, exploring how they can be made stronger, stiffer and more stable</p> <p><u>Vocabulary: structure, chute, stable, stability, design criteria, materials, cut, fold, join, fix, metal, wood, plastic</u></p>	<p><b>Mechanical Systems – Wheels and Axles</b></p> <p><u>National Curriculum objectives:</u>  <i>Explore and evaluate a range of existing products 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 Select from and use a range of tools and equipment to perform practical tasks</i>  <i>Select from and use a wide range of materials and components according to their characteristics</i>  <i>Evaluate their ideas and products against design criteria</i> <b>Technical knowledge:</b> explore and use mechanisms in their product</p> <p><u>Vocabulary: mechanism, axle, chassis, vehicle, design criteria, equipment, assembling, cutting, joining, shaping, finishing, fixed, free</u></p>	<p><b>Food Technology – dips and crudites</b></p> <p><u>National Curriculum objectives:</u>  <i>Use the basic principles of a healthy and varied diet to prepare dishes</i>  <i>Understand where food comes from.</i>  <i>Design appealing food products for themselves and other users based on design criteria</i>  <i>Generate, develop, model and communicate their ideas through talking and drawing</i>  <i>Select from and use a range of tools and equipment to perform practical tasks</i>  <i>Select from and use a range of ingredients according to their characteristics</i>  <i>Evaluate their ideas and products against design criteria</i></p> <ul style="list-style-type: none"> <li>* peeling</li> <li>* chopping</li> <li>* slicing</li> <li>* Stirring</li> </ul> <p><u>Vocabulary: vegetable, crudites, dip, recipe, measure, stir, ingredients</u></p>



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## Explore

Vocab to introduce and use with the children: *structure, chute, stable/stability, prototype*  
Evaluate a marble run in terms of purpose, materials, construction etc

## Develop ideas

- explore a range of materials, including cutting and joining techniques, to create prototypes of one section of a marble run, evaluating pros and cons of each

## Design

Use their observations and comments about the original marble run, as well as their work with prototypes, to establish a design criteria that will allow a marble to roll along its length. Draw, colour and label their design for a section of marble run.

## Make

Make their section of marble run according to their design criteria, selecting appropriate tools, equipment and materials.

## Evaluate

Test and evaluate their section of marble run against their design criteria, suggesting improvements and adaptations with support.  
*Consider joining multiple sections together to create a whole-class marble run. How long can they keep the marble rolling?*

## Explore

Vocab to introduce and use with the children: *mechanism, axle, chassis*  
Explore a range of toy cars and vehicles, identifying features and how they move, naming key parts (wheel, axle, chassis).

## Develop ideas

- Skills lessons – children learn how to measure, mark and cut dowel, and attach wheels using washers if necessary.

## Design

In groups, children establish their design criteria and use this to design a moving vehicle. Draw, colour and label their design.

## Make

In groups, make their chosen vehicle, using appropriate materials, joining techniques and decorative features (using computing skills as appropriate).

## Evaluate

Evaluate their vehicle against their design (criteria and labelled drawing)

## Health and Nutrition

Vocab to introduce and use with the children: *vegetable, crudites, dip, recipe, measure, stir*  
Revise food groups/healthy and varied diet by zooming into vegetables, including how and where they grow. Introduce the idea of dips and crudites: taste test a selection of dips and evaluate.

## Develop ideas

Explore a selection of vegetables in terms of colour, shape, texture for crudites.  
Practise good food hygiene to peel, slice, chop and stir ingredients.

## Design

Children vote as a class to decide on the preferred dip that will be made; write a list of ingredients and draw a labelled exploded diagram of their dip with accompanying crudites.

## Make

Follow a simple recipe to make their class dip, and prepare their crudites by peeling and slicing their chosen vegetable(s).

## Evaluate

Evaluate their dip and crudites against their design, suggesting adaptations with support.



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<p>Possible Resources</p>	<p>Photographs and books containing various structures and mainly examples of marble runs</p> <p>Construction kits that can be used to construct freestanding structures e.g. marble runs.</p> <p>Paper, card, plastic sheet, paper and plastic straws, pipe cleaners reclaimed materials including small containers, card boxes.</p> <p>Cotton reels, string, masking tape pva glue, plasticine, left/right handed scissors, hole punch, stapler finishing media and materials</p>	<p>Selection of toy vehicles with differently fixed axles</p> <p>Card boxes, card, cotton reels, plastic tubing, dowel, clothes pegs, paper sticks/dowel, paper/plastic straws, card discs, mdf wheels, wooden wheels</p> <p>Single hole punch, card drill, cutting mat, masking tape, pva glue, paint, thin/thick paint brushes, felt tip pens, decorative paper, double sided sticky fixers, junior hacksaw, vice, left/right handed scissors</p>	<p>Vegetables, chickpeas, olive oil, lemon juice, yoghurt</p> <p>Chopping boards, knives, peelers, graters, juicers, spoons, jugs, mixing spoons, mashers, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities.</p> <p>Blender/food processor</p>
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	Autumn Term	Spring Term	Summer Term
Year 3	<p><b>Textiles – 2D Shape in to a 3D product: Christmas Tree Decoration</b></p> <p><i>National Curriculum objectives:</i> Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world</p> <p><u>Vocabulary: textiles, thread, aesthetics, decoration, product, materials, prototypes</u></p>	<p><b>Mechanical Systems – Catapults</b></p> <p><i>National Curriculum objectives:</i> Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world</p> <p><b>Technical knowledge:</b> understand and use mechanical systems in their products – <b>levers</b></p> <p><u>Vocabulary: mechanism, base, lever, fulcrum, annotate, catapult, research</u></p>	<p><b>Food Technology - vegetable soup</b></p> <p><i>National Curriculum objectives:</i> 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. Generate, develop, model and communicate their ideas through discussion, annotated sketches and cross-sectional and exploded diagrams Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of ingredients according to their characteristics and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>* <b>peeling</b> * <b>chopping</b> * <b>slicing</b> * <b>heat source</b></p> <p><u>Vocabulary: seasonal, savoury, recipe, measure, heat source, suggest, healthy, varied diet</u></p>



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## Explore

Vocab to introduce and use with the children:  
*textiles, thread, aesthetics*  
Children evaluate a range of Christmas textile tree decorations on the market, discussing how they have been made.

## Develop ideas

Skills lessons – sewing – threading needles, tying knots, running stitch using Binca;  
Apply to swatches of different fabrics, evaluating pros and cons.

## Design

Children establish design criteria for a textile Christmas tree decoration  
Design their Christmas tree decoration by creating a labelled exploded diagram.

## Make

Make their Christmas decoration, guided by their design criteria.

## Evaluate

Evaluate their finished product against their design (criteria and exploded diagram)

## Explore

Vocab to introduce and use with the children:  
*mechanism, base, lever, fulcrum*  
Children explore everyday levers, including their arm when throwing a ball, to establish that a lever is a mechanism that has a balance point – when a force is applied at one end, it causes the load at the other end to move. Identify and label components: lever, fulcrum, load, effort/force

## Develop ideas

- Skills lesson – explore and investigate a range of ways to join materials to create a stable base and a lever with a fulcrum, as well as elastic bands as potential energy.

## Design

Establish a design criteria for an effective catapult. In groups design a catapult, labelling the key components of their mechanism – base, fulcrum, lever, load

## Make

In groups, make their catapult according to their design criteria.

## Evaluate

Test and evaluate their catapult against others in the class and against their original design, measuring distance of propulsion accurately.  
Suggest improvements with support.

## Health and Nutrition

Vocab to introduce and use with the children:  
*seasonal, savoury, recipe, measure, heat source*  
- Using a selection of vegetable soups already on the market, evaluate ingredients in terms of health & nutrition, as well as where/how they are grown.  
- introduce the terms 'savoury' and 'seasonal'

## Develop ideas

Taste test a range of vegetable soups.  
Create a survey based on what they find out as a basis for market research for their own recipe.  
Complete further research into which vegetables are seasonal at this time of year.

## Design

Write a list of 'non-negotiable' ingredients for their vegetable soup based on their market research and on their knowledge of seasonal vegetables. Research a recipe that meets most/all these criteria.

## Make

Follow food hygiene procedures and their vegetable soup recipe to prepare their ingredients. Under adult supervision, use a heat source to cook their soup.

## Evaluate

Taste-test their soup; create an evaluation sheet that will allow some of those who completed the survey to also give feedback.  
with support, suggest adaptations to improve taste or presentation.





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<p><b>Possible Resources</b></p>	<p>Collection of textile products linked to the chosen product to be made</p> <p>Selection of fabrics and fastenings</p> <p>Left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape</p> <p>Items to use for finishing e.g. Fabric paints, threads, appliqué pieces, paints for printing, thin paint brushes</p>	<p>Photographs and books containing various catapult structures</p> <p>Rubber bands, plastic bottle caps, straws, card, kitchen towel or craft foam, flat headed thumb tacks, double sided sticky fixers, hot glue gun, ruler, pencil.</p> <p>1cm square dowel, 5mm rounded dowel</p> <p>Junior hacksaw, vice, glass paper, g-clamps, bench hooks, cutting mats, left/right-handed scissors</p>	<p>Vegetables, cream</p> <p>Chopping boards, knives, peelers, graters, juicers, spoons, jugs, mixing spoons, mashers, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities.</p> <p>Pots, pans, cooker.</p> <p>Blender/food processor</p>
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	Autumn Term	Spring Term	Summer Term
Year 4	<p><b>Structures – Shell Structures: Packaging</b></p> <p><u>National Curriculum objectives:</u>  <i>Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities</i>  <i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</i>  <i>Understand how key events and individuals in design and technology have helped shape the world</i>  <b>Technical knowledge:</b> apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p><u>Vocabulary: packaging, net, tab, reinforce, environment, improvements,</u></p>	<p><b>Electrical Systems - Simple Circuits and Switches</b></p> <p><u>National Curriculum objectives:</u>  <i>Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities</i>  <i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</i>  <i>Understand how key events and individuals in design and technology have helped shape the world</i>  <b>Technical knowledge:</b> understand and use electrical systems in their products</p> <p><u>Vocabulary: mechanism, electrical system, circuit, motor, improvements</u></p>	<p><b>Food Technology – cupcakes</b></p> <p><u>National Curriculum objectives:</u>  <i>Understand and apply the principles of a healthy and varied diet</i>  <i>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.</i>  <i>Generate, develop, model and communicate their ideas through discussion, annotated sketches and cross-sectional and exploded diagrams</i>  <i>Select from and use a wider range of tools and equipment to perform practical tasks accurately</i>  <i>Select from and use a wider range ingredients according to their characteristics and aesthetic qualities</i>  <i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</i></p> <ul style="list-style-type: none"> <li>* weighing</li> <li>* mixing</li> <li>* heat source</li> </ul> <p><u>Vocabulary: weigh(ing), mix, sweet treat, heat source, nutrition, improvements, presentation</u></p>



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## Explore

Vocab to introduce and use with the children:  
*packaging, net, tab, reinforce*

Evaluate packaging already on the market and the features of each. Use egg boxes to focus the children in on packaging to protect the product. Discuss materials (purpose and environmental impact)

## Develop ideas

- Deconstruct packaging and introduce the term 'net', identifying the tabs and what these are for, as well as joining techniques and where the packaging may have been reinforced.
- explore nets, both with and without tabs, building prototypes and discussing effectiveness of design and joining techniques

## Design

Use their observations and comments about the original packaging, as well as their work with prototypes, to establish a design criteria for packaging for sweets. Children draw and label their packaging, including design features.

## Make

Make their sweet packaging according to their design criteria, selecting appropriate tools, equipment and materials (eg choosing to hand draw their graphic designs or use a computer program to create lettering/clip art pics).

## Evaluate

Evaluate their finished product against their design (criteria and labelled diagram), suggesting improvements and adaptations.

## Explore

Vocab to introduce and use with the children:  
*mechanism, electrical system, circuit, motor*

Children explore and label images of a range of fairground rides in terms of movement and construction.

## Develop ideas

- Skills lesson - build simple circuits that incorporate a motor and attach items to the motor to see movement
- create prototypes of fairground rides, using various materials, considering how parts will be connected and where passengers will sit.
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## Design

In groups, establish design criteria for a fairground ride. Create an exploded diagram of their design, including a circuit diagram of their electrical system, as well as labelling materials and movement.

## Make

In groups, make their fairground ride according to their design criteria.

## Evaluate

Test and evaluate their finished product against their design (criteria and exploded diagram), suggesting improvements and adaptations.

## Health and Nutrition

Vocab to introduce and use with the children:  
*weigh, mix, sweet treat, heat source*

- Using a selection of cupcakes already on the market, evaluate ingredients in terms of health and nutrition, and establish they are 'sweet treats' rather than food to be eaten every day.

## Develop ideas

Taste test a range of cupcakes that are already on the market. Evaluate in terms of presentation and taste.

Create a survey based on what they find out as a basis for market research for their own recipe. Make sure to include questions about the decoration as well as the cake itself.

## Design

Research a recipe for simple cupcakes that meet most/all the criteria established by the market research. Write a list of ingredients.

Draw a labelled exploded diagram of their cupcake plus decorations.

## Make

Follow food hygiene procedures and follow their chosen recipe. Under adult supervision, bake the cupcakes in the school oven. Once cool, decorate according to their design criteria.

## Evaluate

Taste-test their cupcakes, considering presentation and taste. Create an evaluation sheet that will allow some of those who completed the survey to also give feedback. Suggest adaptations to improve taste or presentation.



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<p><b>Possible Resources</b></p>	<p>Collection of shell structures for different purposes and users</p> <p>Card, squared paper, coloured paper, adhesive tape, masking tape, pva glue, glue spreaders, acetate sheet, pencils, felt-tip pens, rulers, right/left handed scissors</p> <p>Computer with computer-aided design (cad) software, printer</p>	<p>Handling collection of battery-powered electrical products</p> <p>Switches including toggle, push-to-make and push-to-break</p> <p>Aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials and media</p> <p>Buzzers, bulbs, bulb holders, zinc carbon or zinc chloride batteries batteries, battery holders, wire, automatic wire strippers</p> <p>Suitable control program with interface box or standalone control box</p> <p>Right/left-handed scissors, pva glue, cutting mats</p>	<p>Flour, butter, sugar, eggs, vanilla essence, icing sugar.</p> <p><i>*optional: chocolate drops, blueberries, glacier cherries</i></p> <p>Chopping boards, spoons, jugs, bun cases, mixing spoons, , plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities.</p> <p>Weighing scales</p> <p>Bun trays, oven, oven gloves</p>
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	Autumn Term	Spring Term	Summer Term
Year 5	<p><b>Textiles – Combining Different Fabric Shapes: Money Container</b></p> <p><u>National Curriculum objectives:</u> Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world</p> <p><u>Vocabulary: seam, backstitch, fastening, embellish(ment), hems, fastening, threading, swatches, accurate, evaluate</u></p>	<p><b>Mechanical Systems – Cams</b></p> <p><u>National Curriculum objectives:</u> Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work Understand how key events and individuals in design and technology have helped shape the world</p> <p><b>Technical knowledge:</b> understand and use mechanical systems in their products – <i>cams</i></p> <p><u>Vocabulary: mechanism/mechanical system, cam, rotary, linear, evaluate, automata, inspiration</u></p>	<p><b>Food Technology – Celebrating Culture and Seasonality: Pizzas</b></p> <p><u>National Curriculum objectives:</u> 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. Generate, develop, model and communicate their ideas through discussion, annotated sketches and cross-sectional and exploded diagrams Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of ingredients according to their characteristics and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</p> <p>* weigh * mix * knead * roll</p> <p><u>Vocabulary: savoury, dough, knead, roll, yeast, evaluate, seasonality, reared, processed, sources, variation</u></p>



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## Explore

Vocab to introduce and use with the children: *seam, backstitch, fastening, embellish(ment)*  
Children evaluate a range of fabric money containers on the market, identifying hems, fastenings and embellishments and why these are necessary.

## Develop ideas

Skills lessons - sewing  
Threading needle, tying knot, backstitch, joining to fabric swatches to create a seam, adding a button and loop

## Design

Establish design criteria for their money container. Design their money container by creating a labelled exploded diagram.

## Make

Make their money container, guided by their design criteria.

## Evaluate

Test their finished product by placing coins in their money container. Evaluate against their design (criteria and exploded diagram)

## Explore

Vocab to introduce and use with the children: *mechanism/mechanical system, cam, rotary, linear*

Explain that a cam is a device in a mechanism that turns rotary motion into linear motion.  
Explore examples of everyday cams and share examples of pre-built cams, giving children the opportunity to use and test them.  
Show some of Peter Markey's automata as inspiration for their own designs.

## Develop ideas

- Skills lesson – measure, mark and cut dowel, frame, use appropriate joining techniques

## Design

In groups, children design a cam automata -  
Establish a design criteria and in groups, design a cam automata by creating a cross-section diagram of their design, labelling materials and movement.

## Make

In groups, make their cam automata according to their design criteria.

## Evaluate

Test and evaluate their cam automata against their design (criteria and cross-section diagram), suggesting improvements and adaptations.

## Health and Nutrition

Vocab to introduce and use with the children: *savoury, dough, knead, roll, yeast*  
- Using children's background knowledge of pizza, evaluate the health and nutrition offered by key ingredients.  
- Also research where and how some key ingredients are grown, reared, caught and processed, sorting some into British ingredients and those sourced abroad.

## Develop ideas

Discuss variations of pizza base and toppings.  
Research pizza dough – what it is, how it is made, why it needs yeast, why it has to be kneaded and left to rise etc

## Design

Draw and label an exploded diagram of their pizza design. Research a recipe and write a list of ingredients for their pizza.

## Make

In pairs/groups, follow food hygiene procedures and an appropriate pizza recipe – under adult supervision, cook in school oven (\*\*CAUTION\*\* oven must be VERY HOT\*\*)

## Evaluate

Taste-test their pizza, considering presentation as well as taste. Suggest adaptations to improve taste or presentation.





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<p><b>Possible Resources</b></p>	<p>Existing textile products for investigation and deconstruction linked to their product</p> <p>Wide selection of textiles including reclaimed and reusable fabrics, dipryl</p> <p>Pins, needles, thread, measuring tape, left/right handed fabric scissors, pinking shears iron, iron transfer paper, sewing machine</p> <p>Range of fastenings, materials for insulating or strengthening e.g. Bubble wrap, wadding, interfacing</p> <p>Finishing materials e.g. Sequins, buttons, fabric paints</p>	<p>Videos and photographs of cams, models or toys with different cam mechanisms</p> <p>Mdf, card or wooden wheels, plastic or wooden cams, dowel, card boxes, pva glue, masking tape, double-sided tape, square section wood, card, corrugated plastic, finishing media</p> <p>Junior hacksaws, glass paper, g-clamps, bench hooks, hand drill</p>	<p>Information about food from around the world Video clips of foods in the context of where they come from, used and eaten</p> <p>Range of relevant examples of foods to taste and evaluate</p> <p>Basic recipes</p> <p>Suitable equipment and utensils to make and cook recipes such as: weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film</p>
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	Autumn Term	Spring Term	Summer Term
Year 6	<p><b>Structures – Bridge Bonanza</b></p> <p><i>National Curriculum objectives:</i>  <i>Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of materials and components according to their functional properties and aesthetic qualities 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</i></p> <p><b>Technical knowledge:</b> apply their understanding of how to strengthen, stiffen and reinforce more complex structures</p> <p><u>Vocabulary: engineer, strut, load, symmetry, accuracy, aesthetic, functional, techniques, reinforce, frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent</u></p>	<p><b>Electrical systems – Monitoring and Control: An electronic moneybox</b></p> <p><i>National Curriculum objectives:</i>  <i>Investigate and analyse a range of existing products 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 Select from and use a wider range of tools and equipment to perform practical tasks accurately 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</i></p> <p><b>Technical knowledge:</b> apply their understanding of computing to program, monitor and control their products</p> <p><u>Vocabulary: control, program, system, process, input device, output device, microcontroller, LED, functional, practical, innovative, evaluate, specification, microswitches, modify</u></p>	<p><b>Food Technology – short crust pastry (savoury tarts)</b></p> <p><i>National Curriculum objectives:</i>  <i>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. Generate, develop, model and communicate their ideas through discussion, annotated sketches and cross-sectional and exploded diagrams Select from and use a wider range of tools and equipment to perform practical tasks accurately Select from and use a wider range of ingredients according to their characteristics and aesthetic qualities Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work</i></p> <p>* weigh            * sift            * rub            * Roll</p> <p><u>Vocabulary: savoury, pastry, sift, rub, accuracy, evaluate, adaptation</u></p>



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## Explore

Vocab to introduce and use with the children:  
*engineer, strut, load, symmetry*

Explore images of a range of bridges from around the world, discussing in terms of purpose and design.

Introduce important civil engineers through history, including Isambard Kingdom Brunel, Thomas Telford, Gustave Eiffel, Joseph Strauss

## Develop ideas

Use lolly sticks and a range of joining techniques to practise making straight joints, angled joints and trusses. Make a beam, extending the length, strengthening and reinforcing with struts and trusses.

## Design

Establish a design criteria. In groups, children draw and label their bridge design.

## Make

In groups, build their bridge according to their design criteria, selecting appropriate tools, equipment and materials

## Evaluate

Test their bridge against their design criteria, including adding weights (the load) on their bridge. Evaluate their bridge against their design (criteria and labelled drawing), suggesting improvements and adaptations based on evident weaknesses in their structures.

## Explore and Develop Ideas

Vocab to introduce and use with the children:  
*Control, program, system, process, input device, output device, microcontroller, LED.*

Expose children to a range of products that use computing to program, monitor and control them. For example, nightlights, garden lights, alarm systems, security lighting. These all respond to changes in the environment using a computer control program.

Ask key question: *Why is a computer control program used to operate these products? What is the advantage?*

Discuss input devices e.g. switches and output devices e.g. bulbs and buzzers. Children to document their ideas.

Zoom in on light dependent resistors (LDRs) and a range of switches such as push to make, push to break, toggle, micro and reed switches. -Children gain an understanding of how they operate and use each component to control a lightbulb in a simple circuit. Children could research a famous inventor related to this project e.g. Thomas Edison – light bulb.

## Design

Establish design criteria for an electronic moneybox by considering these key questions: Who will my moneybox be for? How will it motivate the user to save money? How might it be programmed? What components will it need? Children annotate sketches and generate a design specification. Children should indicate the

## Health and Nutrition

Vocab to introduce and use with the children:  
*savoury, pastry, sift, rub*

- Using a selection of savoury tarts already on the market, evaluate ingredients in terms of health and nutrition  
- Research where and how some key ingredients are grown, reared, caught and processed, and evaluate the pros and cons of shop-bought and home-made produce.

## Develop ideas

Taste test a range of savoury tarts that are already on the market. Evaluate in terms of presentation and taste.  
Research short crust pastry – what it is, how it is made, what it means to rub and sift, and why it is important to not over-work the dough.

## Design

Research a recipe for their preferred tart that meet most/all the criteria established by their discussion/preferences for fillings.  
Write a list of ingredients and draw a labelled cross-section diagram.

## Make

In pairs/groups, follow food hygiene procedures and their savoury tart recipe to make their tart. Under adult supervision, cook in school oven

## Evaluate

Taste-test their savoury tart, considering presentation as well as taste. Suggest adaptations to improve taste or presentation.



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location of electrical components and how they work as a system including input, process and output. Reference to be made to the control program (Crumble) used and how it will operate the inputs (Micro input) and outputs (sparkle LED). Children produce a step-by-step plan including all tools needed.

**- Make**

Children make the electronic moneybox applying the knowledge and understanding of the process. Children create and modify a computer control program to enable the product to work automatically in response to changes in the environment.

**Evaluate**

Test and evaluate their electronic moneybox and critically evaluate comparing it to the original design specification. Test the system to demonstrate its effectiveness for the intended user and purpose. Further questions for extended evaluation could include:

How could children adapt the program so that it would detect a burglar stealing the moneybox?  
What type of output device could they use?  
What type of switch could detect the movement of the moneybox?

How could the program be adapted to remind the user to save money on a regular basis?



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<p>Possible Resources</p>	<p>Products, photographs, web-based resources of existing bridge frame structures.</p> <p>Card, paper straws, newspaper, square sectioned wood, dowel, Paper, card, cardboard.</p> <p>Masking tape, PVA glue, hot glue.</p> <p>Pencils, rulers, right/left-handed scissors.</p> <p>Bench hooks, G-clamp, junior hacksaws, glass paper (sand paper), finishing media and materials</p>	<p>Microcontroller or standalone control box or interface box</p> <p>Collection of battery-powered, manually controlled and programmable products</p> <p>Batteries, battery holders, crocodile leads</p> <p>Different output devices including bulbs with bulb holders, buzzers, light emitting diodes (leds), motors</p> <p>Different input devices including micro switches, reed switches and magnets, light dependent resistors (ldrs)</p> <p>Wire, automatic wire strippers, masking tape, construction materials and tools as required</p>	<p>Various savoury tarts and quiches.</p> <p>Flour, butter, egg, milk, grated cheese.</p> <p><i>*optional: bacon pieces, tomatoes, onions</i></p> <p>Chopping boards, knives, peelers, graters, juicers, spoons, jugs, mixing spoons, mashers, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities.</p> <p>Oven, oven gloves, baking tray, bun tray</p>
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