Burradon Community Primary School
Year 1
Design and Technology

Peeling

Cutting

Slicing

Grating

Squeezing

Food Processing Equipment

Utensil	Food	Effect	Mouth feel
Juicer 	Orange	Makes juice	Liquid
Peeler 	Apple	Unpeeled apple	Crunchy
Knife 	Carrot	Thin rings	Crispy hard

Vocabulary

fruit and vegetable names, names of equipment and utensils

sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard

flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria

Hygiene – some key pointers

- Jewellery is removed
- Hair is tied back
- Sleeves are rolled up
- Aprons are on
- Hands are washed
- Cuts are covered with blue waterproof dressing

Further information from www.foodafactoflife.org.uk

Food – Making a smoothie

Glossary

- **Fruit** – plant or tree's edible seed with envelope.
- **Vegetable** – plant used for food.
- **Nutrients** – all the things in food that the body needs to remain healthy.
- **Pith** – the soft white lining inside fruit such as oranges.
- **Salad** – a cold dish of fresh and/or cooked vegetables or fruit.
- **Sensory evaluation** – subjective testing of foods where senses are used to evaluate qualities such as appearance, smell, taste, texture (mouth feel).
- **Kebab** – cooked and/or fresh ingredients on a skewer.

Designing

- Design appealing products for a particular user based on simple design criteria.
- Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.
- Communicate these ideas through talk and drawings.

Making

- Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.
- Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.

Evaluating

- Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.
- Evaluate ideas and finished products against design criteria, including intended user and purpose.

Technical knowledge and understanding

- Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.
- Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eatwell plate*.
- Know and use technical and sensory vocabulary relevant to the project.

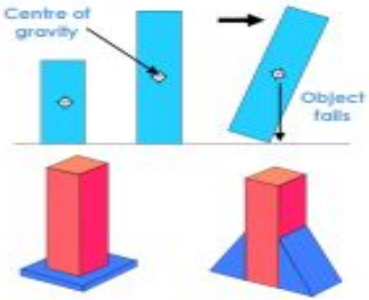
Burradon Community Primary School
Year 1
Design and Technology

Techniques for assembling freestanding structures

Show children how to join sheet materials and reclaimed boxes together using different tapes and glues.

Technical knowledge and understanding

Build walls with these different patterns. Tap away the centre brick in the bottom row of each wall in turn. What happens? Which wall is the strongest?



As a freestanding structure becomes taller its centre of gravity rises. Stability in a structure can generally be increased by making the base wider, making the base heavier or adding buttresses.

Ask the children to build and explore a variety of freestanding structures through focused tasks. Use a range of construction kits.

Vocabulary

cut, fold, join, fix

structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved

metal, wood, plastic

circle, triangle, square, rectangle, cuboid, cube, cylinder

design, make, evaluate, user, purpose, ideas, design criteria, product, function

Prior learning

- Experience of using construction kits to build walls, towers and frameworks.
- Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.
- Experience of different methods of joining card and paper.

Freestanding Structures

Glossary

- **Freestanding structure** – a structure that stands on its own foundation or base without attachment to anything else.
- **Frame structure** – a structure made from thin components e.g. tent frame.
- **Shell structure** – a hollow structure with a thin outer covering.
- **Stability** – in relation to a freestanding structure, the extent to which it is likely to fall over if a force is applied.
- **Buttress** – a structure added to a wall, tower or framework to make it more stable and/or reinforce it.
- **Brick bonding** – arranging bricks in a wall to improve the performance of the structure or improve its appearance.
- **Mock-up** – 3-D representation of a product.

Designing

- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through talking, mock-ups and drawings.

Making

- Plan by suggesting what to do next.
- Select and use tools, skills and techniques, explaining their choices.
- Select new and reclaimed materials and construction kits to build their structures.
- Use simple finishing techniques suitable for the structure they are creating.

Evaluating

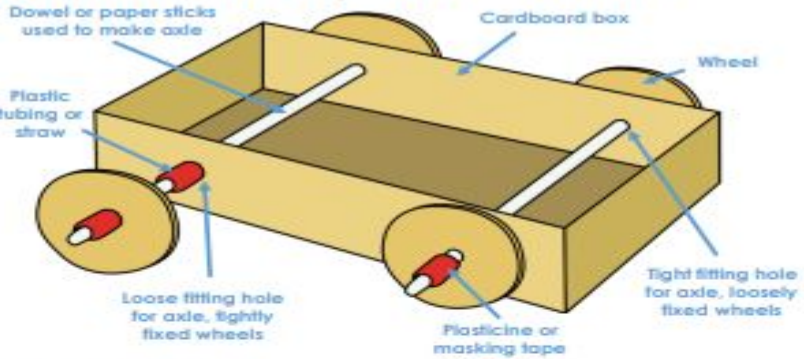
- Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.
- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.

Technical knowledge and understanding

- Know how to make freestanding structures stronger, stiffer and more stable.
- Know and use technical vocabulary relevant to the project.

Burradon Community Primary School
Year 1
Design and Technology

Two different ways to fix wheels



Types of wheels

Ways to hold moving axles

Use **pairs of clothes pegs** glued with PVA to the underside of a box.
Check the peg holes are large enough to allow axles to move freely.
Make sure they are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.

Use **card triangles** with holes for the axle.
Check the holes are large enough to allow the axle to move freely.
Make sure opposite triangles are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.

Use **large paper/plastic straws** fixed with masking tape to the underside of a box.
Check straws are positioned carefully so the vehicle will move in a straight line when the wheel and axle mechanisms are added.
Make sure the straw hole is large enough to allow the axle to move freely. The wheels must be fixed tightly to the axle.

Vocabulary

vehicle, wheel, axle, axle holder, chassis, body, cab

assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism

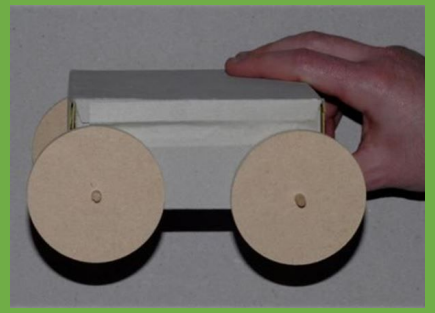
names of tools, equipment and materials used

design, make, evaluate, purpose, user, criteria, functional

Prior learning

- Assembled vehicles with moving wheels using construction kits.
- Explored moving vehicles through play.
- Gained some experience of designing, making and evaluating products for a specified user and purpose.
- Developed some cutting, joining and finishing skills with card.

Wheels and Axles



Glossary

- **Axle** – a rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle.
- **Axle holder** – the component through which an axle fits and rotates.
- **Chassis** – the frame or base on which a vehicle is built.
- **Friction** – resistance which is encountered when two things rub together.
- **Dowel** – wooden rods used for making axles to hold wheels.

Designing

- Generate initial ideas and simple design criteria through talking and using own experiences.
- Develop and communicate ideas through drawings and mock-ups.

Making

- Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.
- Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.

Evaluating

- Explore and evaluate a range of products with wheels and axles.
- Evaluate their ideas throughout and their products against original criteria.

Technical knowledge and understanding

- Explore and use wheels, axles and axle holders.
- Distinguish between fixed and freely moving axles.
- Know and use technical vocabulary relevant to the project.

Burradon Community Primary School
Year 2
Design and Technology

Three alternative ways of using templates and simple pattern pieces

Exploring and evaluating joining techniques

Joining fabric

Finishing techniques

Explore different techniques, including information and communication technology, for creating fabric designs and finishing techniques.

Vocabulary

names of existing products, joining and finishing techniques, tools, fabrics and components

template, pattern pieces, mark out, join, decorate, finish

features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function

Prior learning

- Explored and used different fabrics.
- Cut and joined fabrics with simple techniques.
- Thought about the user and purpose of products.

Textiles - Puppets

Glossary

- **Appliqué** – to attach a decorative fabric item onto another piece of fabric by gluing and/or sewing.
- **Design** – to generate, develop and communicate ideas for a product.
- **Embroider** – to decorate fabric with stitches.
- **Evaluate** – to judge how a product meets chosen criteria.
- **Fray** – to unravel or become worn at the edge.
- **Glove puppet** – a glove puppet fits over the hand, and the fingers operate its head and arms.
- **Mock-up** – a model which allows children to try out ideas using cheaper materials and temporary joints.
- **Seam** – a row of stitches joining two pieces of fabric.
- **Sew** – to join pieces of fabric with stitches.
- **Template** – a shape drawn to assist in cutting out shapes.

Designing

- Design a functional and appealing product for a chosen user and purpose based on simple design criteria.
- Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.

Making

- Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.
- Select from and use textiles according to their characteristics.

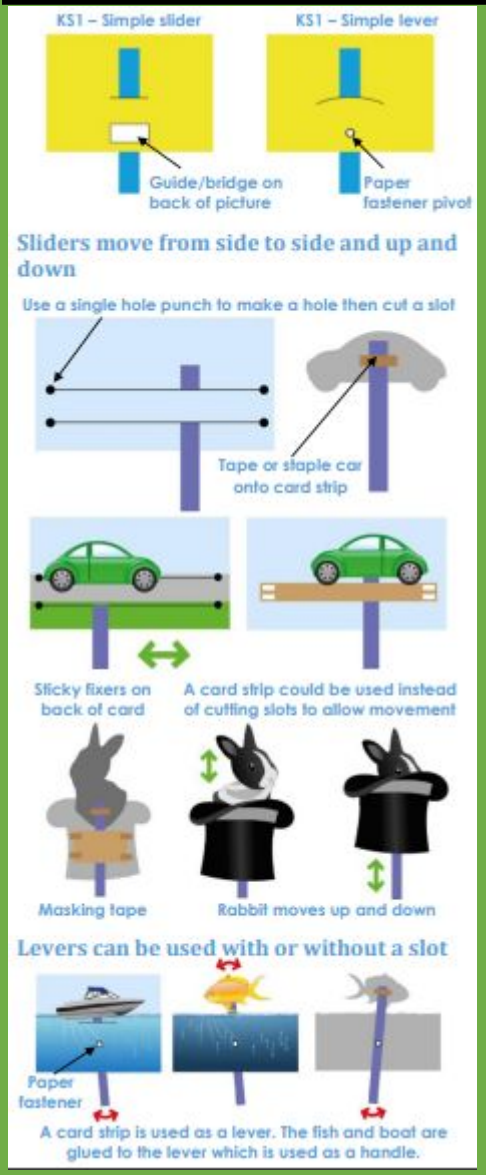
Evaluating

- Explore and evaluate a range of existing textile products relevant to the project being undertaken.
- Evaluate their ideas throughout and their final products against original design criteria.

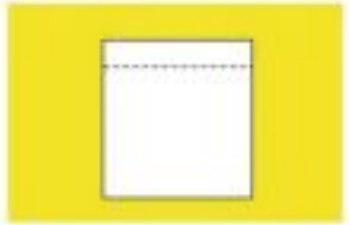
Technical knowledge and understanding

- Understand how simple 3-D textile products are made, using a template to create two identical shapes.
- Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.
- Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.
- Know and use technical vocabulary relevant to the project.

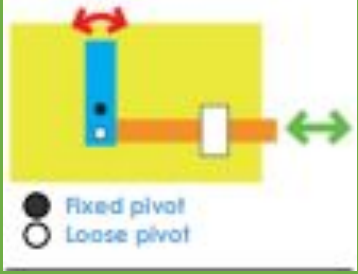
Burradon Community Primary School
Year 2
Design and Technology



As an enhancement to this project children could add flaps to their moving pictures. Some children may find flaps, which can be used to make a picture appear and disappear, easier to make than levers or sliders.



Where children have a particularly good understanding of levers and sliders in Key Stage 1, they could be introduced to the simplest lever and linkage mechanism used in Key Stage 2. This will introduce them to the idea of loose and fixed pivots.



Vocabulary

slider, lever, pivot, slot, bridge/guide

card, masking tape, paper fastener, join

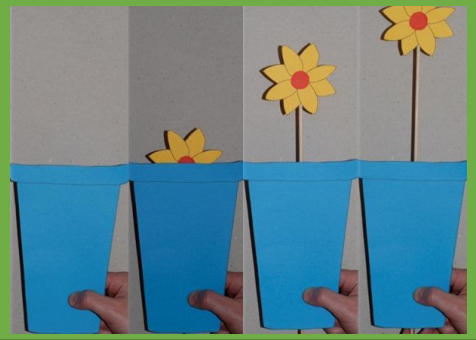
pull, push, up, down, straight, curve, forwards, backwards

design, make, evaluate, user, purpose, ideas, design criteria, product, function

Prior learning

- Early experiences of working with paper and card to make simple flaps and hinges.
- Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.

Sliders and Levers



Designing

- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through drawings and mock-ups with card and paper.

Making

- Plan by suggesting what to do next.
- Select and use tools, explaining their choices, to cut, shape and join paper and card.
- Use simple finishing techniques suitable for the product they are creating.

Evaluating

- Explore a range of existing books and everyday products that use simple sliders and levers.
- Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.

Technical knowledge and understanding

- Explore and use sliders and levers.
- Understand that different mechanisms produce different types of movement.
- Know and use technical vocabulary relevant to the project.

Glossary

- **Mechanism** – a device used to create movement in a product.
- **Lever** – a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strips for levers and paper fasteners for pivots.
- **Slider** – a rigid bar which moves backwards and forwards along a straight line. Unlike a lever, a slider does not have a pivot point.
- **Slot** – the hole through which a lever or slider is placed to enable part of a picture to move.
- **Guide or bridge** – a short card strip used to keep sliders in place and control movement.

Burradon Community Primary School
Year 2
Design and Technology

Vocabulary

fruit and vegetable names, names of equipment and utensils

sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard

flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria

Prior learning

- Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.
- Experience of cutting soft fruit and vegetables using appropriate utensils.

Hygiene – some key pointers

- Jewellery is removed
- Hair is tied back
- Sleeves are rolled up
- Aprons are on
- Hands are washed
- Cuts are covered with blue waterproof dressing

Further information from www.foodafactoflife.org.uk

Peeling

Cutting

Slicing

Grating

Squeezing

Food Processing Equipment

Utensil	Food	Effect	Mouth feel
Juicer 	Orange	Makes juice	Liquid
Peeler 	Apple	Unpeeled apple	Crunchy
Knife 	Carrot	Thin rings	Crispy hard

Food – Making a Fruit Salad

Glossary

- **Fruit** – plant or tree's edible seed with envelope.
- **Vegetable** – plant used for food.
- **Nutrients** – all the things in food that the body needs to remain healthy.
- **Pith** – the soft white lining inside fruit such as oranges.
- **Salad** – a cold dish of fresh and/or cooked vegetables or fruit.
- **Sensory evaluation** – subjective testing of foods where senses are used to evaluate qualities such as appearance, smell, taste, texture (mouth feel).
- **Kebab** – cooked and/or fresh ingredients on a skewer.

Designing

- Design appealing products for a particular user based on simple design criteria.
- Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.
- Communicate these ideas through talk and drawings.

Making

- Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.
- Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.

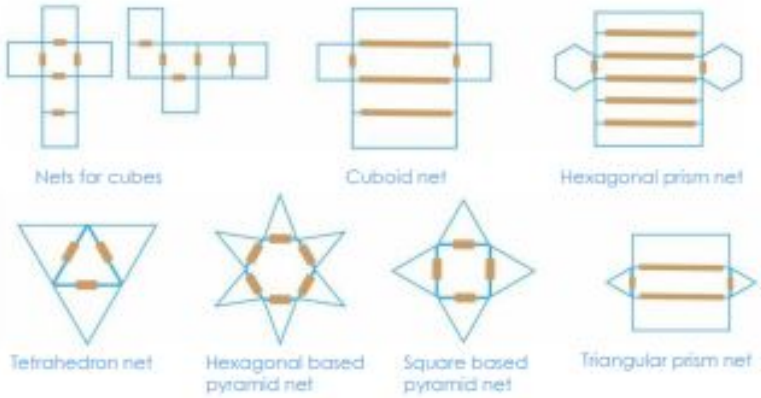
Evaluating

- Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.
- Evaluate ideas and finished products against design criteria, including intended user and purpose.

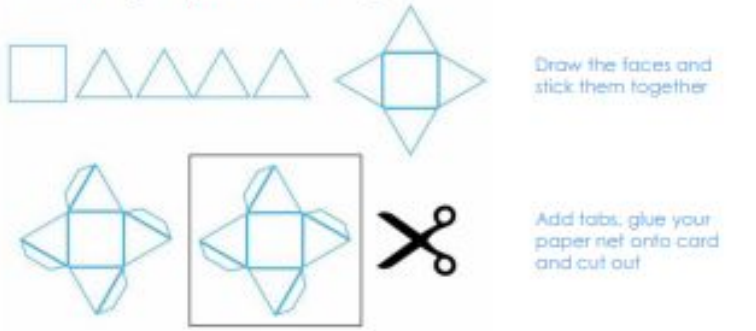
Technical knowledge and understanding

- Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.
- Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of *The eatwell plate*.
- Know and use technical and sensory vocabulary relevant to the project.

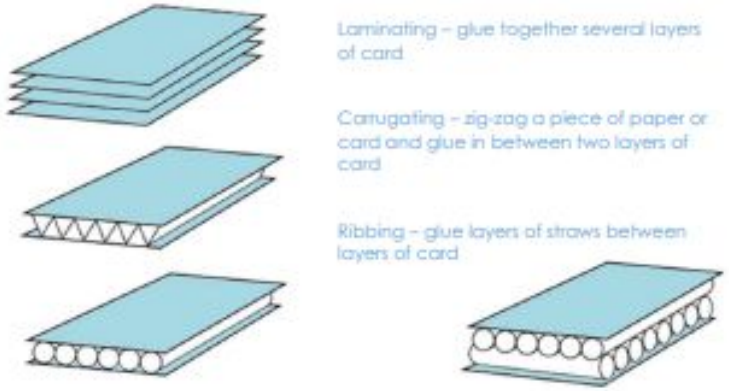
Assemble and evaluate 3-D shapes using standard sized card squares, rectangles, equilateral triangles, isosceles triangles and hexagons, joined with masking tape.



Creating the net for the product you are designing and making without using computer aided design:



Stiffening and strengthening sheet materials:



Vocabulary

shell structure, three-dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity

marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating

font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype

Prior learning

- Experience of using different joining, cutting and finishing techniques with paper and card.
- A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science.

Burradon Community Primary School - Year 3
DT - Shell Structures

Glossary

- **Cuboid** – a solid body with rectangular sides.
- **Edge** – where two surfaces meet at an angle.
- **Face** – a surface of a geometric shape.
- **Font** – a printer's term meaning the style of lettering being used.
- **Net** – the flat or opened-out shape of an object such as a box.
- **Prism** – a solid geometric shape with ends that are similar, equal and parallel.
- **Scoring** – cutting a line or mark into sheet material to make it easier to fold.
- **Shell structure** – a hollow structure with a thin outer covering.
- **Vertex** – used to refer to the corners of a solid geometric shape, where edges meet.

Designing

- Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product.
- Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas.

Making

- Order the main stages of making.
- Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.
- Explain their choice of materials according to functional properties and aesthetic qualities.
- Use finishing techniques suitable for the product they are creating.

Evaluating

- Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.
- Test and evaluate their own products against design criteria and the intended user and purpose.

Technical knowledge and understanding

- Develop and use knowledge of how to construct strong, stiff shell structures.
- Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes.
- Know and use technical vocabulary relevant to the project.

joining techniques


Back stitch


Backwards running stitch


Over sew stitch


Blanket stitch


Running stitch

Cutting out techniques


Ensure template is secured to fabric to allow for accuracy. Double sided tape can be used instead of pins to do this.


Place pattern pieces carefully to avoid wastage.

To move children's learning on, as enhancement activities, children could research into different types of fabrics and how they are constructed. They could carry out tests to check e.g. strength, waterproofness or flexibility to ensure their chosen fabric can be used to create a product that meets the needs of user and is fit for purpose.


Bonded


Woven


Knitted


Felted

Decorative Techniques


Embroidery stitches e.g. cross-stitch


Appliqué by gluing or stitching

Possible fastenings


Buttons


Velcro

Vocabulary

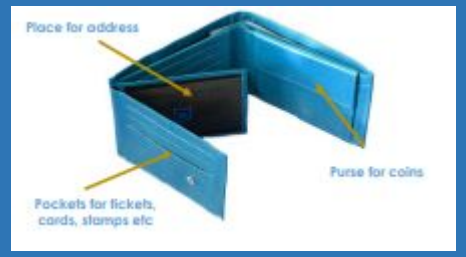
fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance

user, purpose, design, model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces

Prior learning

- Have joined fabric in simple ways by gluing and stitching.
- Have used simple patterns and templates for marking out.
- Have evaluated a range of textile products.

Burradon Community Primary School - Year 3
DT – 2D shape – 3D product



Glossary

- **Appliqué** – means 'applied' - describes method of stitching/gluing patches onto fabric (originally to mend holes in worn clothes) to provide decoration.
- **Pattern/Template** – a shape drawn to exact shape and size and used to assist cutting out.
- **Seam** – a line of stitching that joins pieces of fabrics together.
- **Seam Allowance** – extra fabric allowed for joining together - usually 1.5cm.
- **Prototype** – a model that is made to test whether a design will work.
- **Aesthetics** – the way in which the product looks with the nature and expression of beauty.

Designing

- Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.
- Produce annotated sketches, prototypes, final product sketches and pattern pieces.

Making

- Plan the main stages of making.
- Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.
- Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.

Evaluating

- Investigate a range of 3-D textile products relevant to the project.
- Test their product against the original design criteria and with the intended user.
- Take into account others' views.
- Understand how a key event/individual has influenced the development of the chosen product and/or fabric.

Technical knowledge and understanding

- Know how to strengthen, stiffen and reinforce existing fabrics.
- Understand how to securely join two pieces of fabric together.
- Understand the need for patterns and seam allowances.
- Know and use technical vocabulary relevant to the project.

Wraps

Pitta bread sandwich

Sandwich

Skills and techniques

Grating cheese

Spreading butter on bread

Cutting using the bridge technique

Cutting using the claw technique

Investigating and Evaluating Activities

Children can analyse existing products related to their project using sensory evaluations and record their results in a table. Explain that tasting is not the same as eating. Provide kitchen towel so children can spit out food they do not like. Provide water to cleanse palette between tasting products.

Analysing existing products

Filling	Appearance	Smell	Flavour/ Taste	Texture	Dislike	Neither	Like
1							
2							
3							
4							
Word bank	Colourful Dark/pale Greasy Moist	Fruity Meaty Smoky Oniony Garlicky Fishy	Salty Herby Spicy Fishy Smoky	Crispy Crunchy Soft Chewy Sticky Smooth Hard			

Vocabulary

name of products, names of equipment, utensils, techniques and ingredients

texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury

hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet

planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Prior learning

- Know some ways to prepare ingredients safely and hygienically.
- Have some basic knowledge and understanding about healthy eating and *The eatwell plate*.
- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Burradon Community Primary School - Year 3
DT – Food

Glossary

- **Appearance** – how the food looks to the eye.
- **Texture** – how the product feels in the mouth.
- **Sensory evaluation** – evaluating food products in terms of the taste, smell, texture and appearance.
- **Preference test** – trying different foods and deciding which you like best.
- **Strawberry huller** – tool to remove the stalk and leaves from a strawberry.
- **Processed food** – ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking.

Designing

- Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.
- Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.

Making

- Plan the main stages of a recipe, listing ingredients, utensils and equipment.
- Select and use appropriate utensils and equipment to prepare and combine ingredients.
- Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.

Evaluating

- Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.
- Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.

Technical knowledge and understanding

- Know how to use appropriate equipment and utensils to prepare and combine food.
- Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.
- Know and use relevant technical and sensory vocabulary appropriately.

Wraps

Pitta bread sandwich

Sandwich

Skills and techniques

Grating cheese

Spreading butter on bread

Cutting using the bridge technique

Cutting using the claw technique

Investigating and Evaluating Activities

Children can analyse existing products related to their project using sensory evaluations and record their results in a table. Explain that tasting is not the same as eating. Provide kitchen towel so children can spit out food they do not like. Provide water to cleanse palette between tasting products.

Analysing existing products

Filling	Appearance	Smell	Flavour/ Taste	Texture	Dislike	Neither	Like
1							
2							
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Word bank	Colourful Dark/pale Greasy Moist	Fruity Meaty Smoky Oniony Garlicky Fishy	Salty Herby Spicy Fishy Smoky	Crispy Crunchy Soft Chewy Sticky Smooth Hard			

Vocabulary

name of products, names of equipment, utensils, techniques and ingredients

texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury

hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet

planning, design criteria, purpose, user, annotated sketch, sensory evaluations

Prior learning

- Know some ways to prepare ingredients safely and hygienically.
- Have some basic knowledge and understanding about healthy eating and *The eatwell plate*.
- Have used some equipment and utensils and prepared and combined ingredients to make a product.

Burradon Community Primary School - Year 4
DT – Food

Glossary

- **Appearance** – how the food looks to the eye.
- **Texture** – how the product feels in the mouth.
- **Sensory evaluation** – evaluating food products in terms of the taste, smell, texture and appearance.
- **Preference test** – trying different foods and deciding which you like best.
- **Strawberry huller** – tool to remove the stalk and leaves from a strawberry.
- **Processed food** – ingredients that have been changed in some way to enable them to be eaten or used in food preparation and cooking.

Designing

- Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose.
- Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.

Making

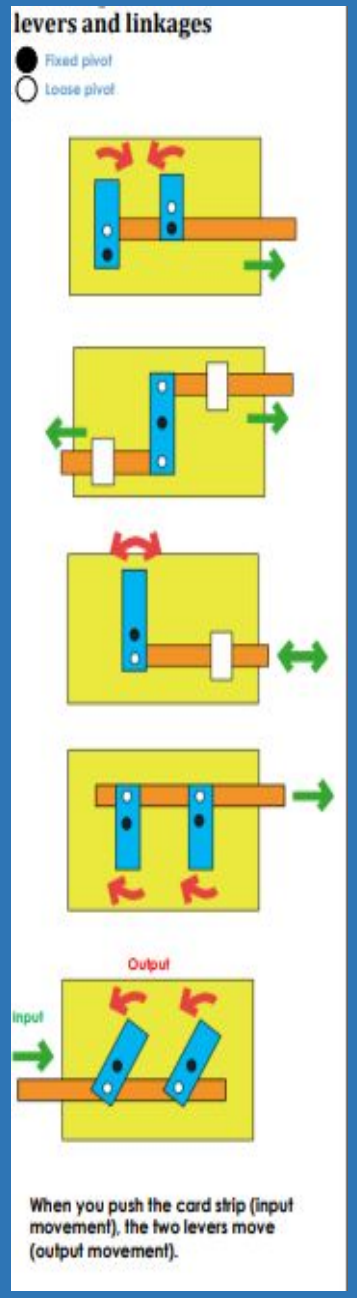
- Plan the main stages of a recipe, listing ingredients, utensils and equipment.
- Select and use appropriate utensils and equipment to prepare and combine ingredients.
- Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.

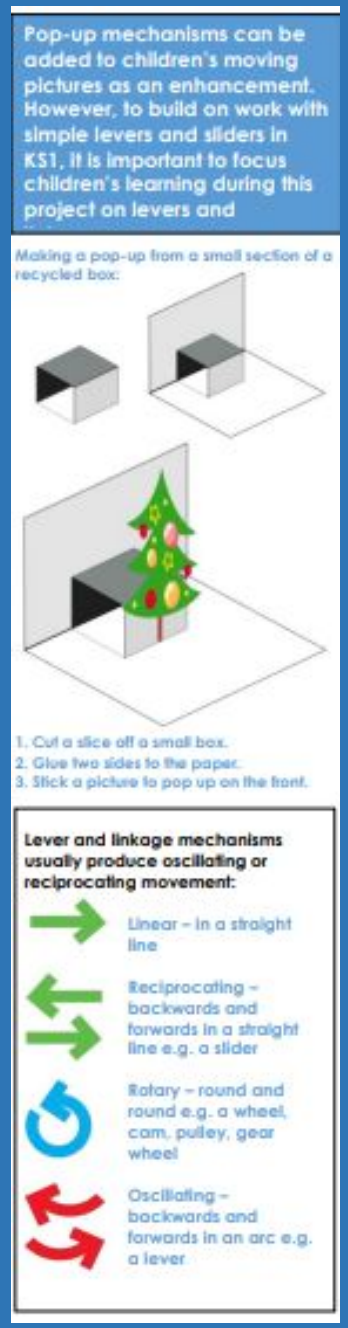
Evaluating

- Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.
- Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.

Technical knowledge and understanding

- Know how to use appropriate equipment and utensils to prepare and combine food.
- Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.
- Know and use relevant technical and sensory vocabulary appropriately.





Vocabulary

mechanism, lever, linkage, pivot, slot, bridge, guide

system, input, process, output

linear, rotary, oscillating, reciprocating

user, purpose, function

prototype, design criteria, innovative, appealing, design brief

Prior learning

- Explored and used mechanisms such as flaps, sliders and levers.
- Gained experience of basic cutting, joining and finishing techniques with paper and card.

Burradon Community Primary School - Year 4
DT – Levers and Linkages

Glossary

- **Mechanism** – a device used to create movement in a product.
- **Lever** – a rigid bar which moves around a pivot. Levers are used in many everyday products. In this project children will use card strips for levers and paper fasteners for pivots.
- **Linkage** – the card strips joining one or more levers to produce the type of movement required. The term 'linkage' is also used to describe the lever and linkage mechanism as a whole.
- **Slot** – the hole through which a lever is placed to enable part of a picture to move.
- **Guide or bridge** – a short card strip used to keep lever and linkage mechanisms in place and control movement.
- **Loose pivot** – a paper fastener that joins card strips together.
- **Fixed pivot** – a paper fastener that joins card strips to the backing card.
- **System** – a set of related parts or components used to create an outcome. Systems have an input, process and an output. In a lever and linkage mechanism, the 'input movement' is where the user pushes or pulls a card strip. The 'output movement' is where one or more parts of the picture move.

Designing

- Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user.
- Use annotated sketches and prototypes to develop, model and communicate ideas.

Making

- Order the main stages of making.
- Select from and use appropriate tools with some accuracy to cut, shape and join paper and card.
- Select from and use finishing techniques suitable for the product they are creating.

Evaluating

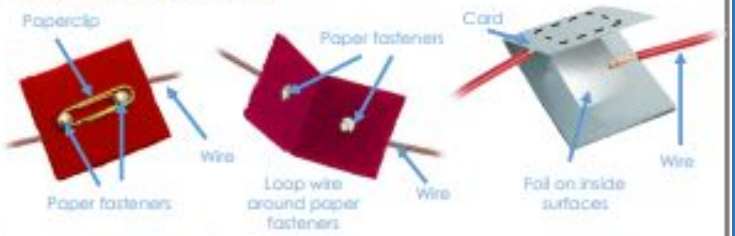
- Investigate and analyse books and, where available, other products with lever and linkage mechanisms.
- Evaluate their own products and ideas against criteria and user needs, as they design and make.

Technical knowledge and understanding

- Understand and use lever and linkage mechanisms.
- Distinguish between fixed and loose pivots.
- Know and use technical vocabulary relevant to the project.

Making secure connections

Handmade switches



Commercial switches

Push-to-break switch
The switch is off while the button is pushed, but returns to its 'on' position when button is released.

Push-to-make switch
When you push, the electricity flows through the circuit, but when you release it the circuit is broken and the switch is off.

Reed switch
Activated by a magnet – this closes the contacts and completes the circuit.

Toggle switch
Simple on/off switch

Standalone control box

When children are familiar with using electrical circuits they should be introduced to a simple standalone control box or an interface box. The box will replace their switches and battery, and children can program their product to work automatically.

Vocabulary

series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip

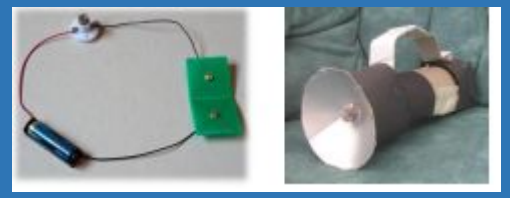
control, program, system, input device, output device

user, purpose, function, prototype, design criteria, innovative, appealing, design brief

Prior learning

- Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.
- Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Burradon Community Primary School - Year 4
DT – Electrical Systems



Glossary

- **Circuit** – path through which electricity passes.
- **Conductor** – a material which allows an electric current to pass through it.
- **Insulator** – a material which does not easily allow electric current to pass through it.
- **Prototype** – a model made to test whether a design will work.
- **Push-to-break switch** – a switch turned off by pressing it.
- **Push-to-make switch** – a switch turned on by pressing it.
- **Reed switch** – a switch operated by a magnet.
- **Toggle switch** – a switch operated when a lever is pressed.
- **System** – a set of related parts or components that together achieve a desired outcome.
- **Output devices** – components that produce an outcome e.g. bulbs and buzzers.
- **Input devices** – components that are used to control an electrical circuit e.g. switches.

Designing

- Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

Making

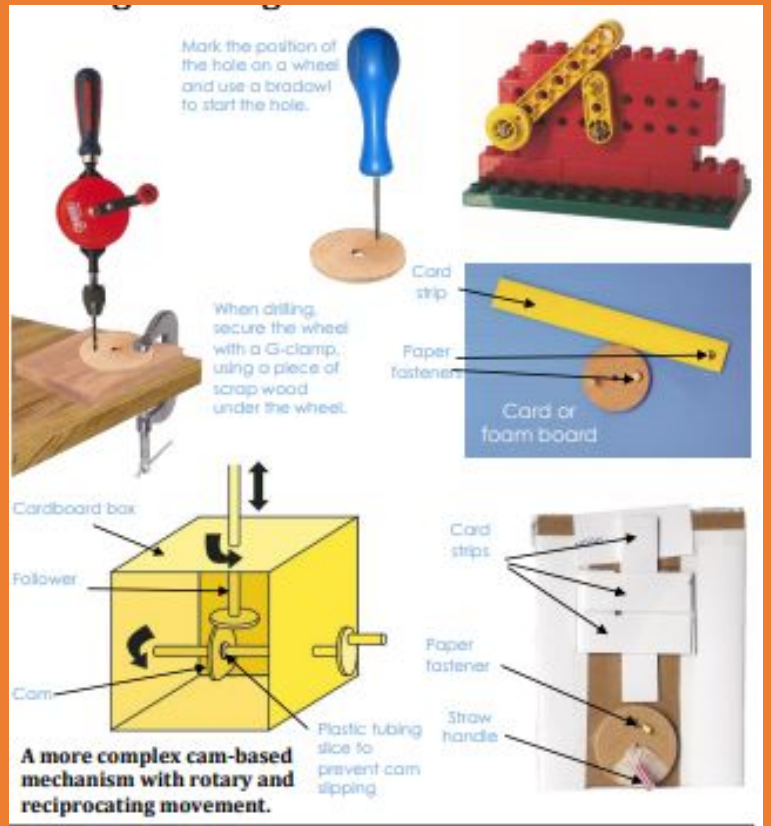
- Order the main stages of making.
- Select from and use tools and equipment to cut, shape, join and finish with some accuracy.
- Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

Evaluating

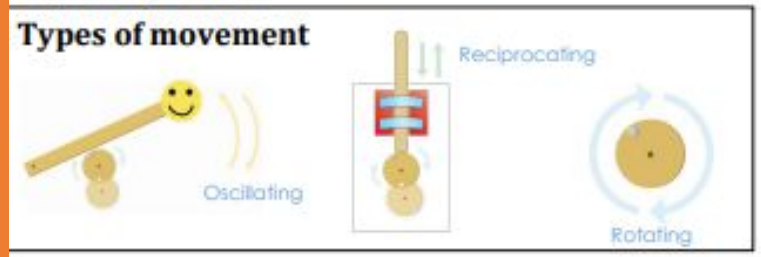
- Investigate and analyse a range of existing battery-powered products.
- Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

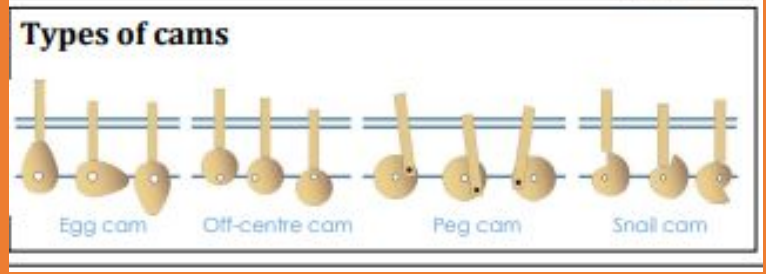
Technical knowledge and understanding

- Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.
- Apply their understanding of computing to program and control their products.
- Know and use technical vocabulary relevant to the project.



A more complex cam-based mechanism with rotary and reciprocating movement.





Vocabulary

cam, snail cam, off-centre cam, peg cam, pear shaped cam

follower, axle, shaft, crank, handle, housing, framework

rotation, rotary motion, oscillating motion, reciprocating motion

annotated sketches, exploded diagrams

mechanical system, input movement, process, output movement

design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief

Prior learning

- Experience of axles, axle holders and wheels that are fixed or free moving.
- Basic understanding of different types of movement.
- Experience of cutting and joining techniques with a range of materials including card, plastic and wood.
- An understanding of how to strengthen and stiffen structures.

Burradon Community Primary School - Year 5
DT - CAMs

Glossary

- **Rotary motion** – movement that goes round.
- **Oscillating motion** – moving to and fro around a pivot point, as in a lever.
- **Reciprocating motion** - backwards and forwards movement in a straight line, as in a slider.
- **Cam** – a mechanism that changes one sort of movement to another. Cams can be an off-centre wheel or a specially shaped wheel.
- **Follower** – the device that follows the movement of the cam: a lever or a slider.
- **Lever** – a piece of rigid material that moves to and fro around a pivot point creating oscillating motion.
- **Slider** – a piece of rigid material that moves backwards and forwards in a straight line creating reciprocating motion.
- **Guide** – a piece of material used to guide the movement of another.
- **Spacer** – a piece of material used to create extra space to allow moving parts to move freely.

Designing

- Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide their thinking.
- Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.

Making

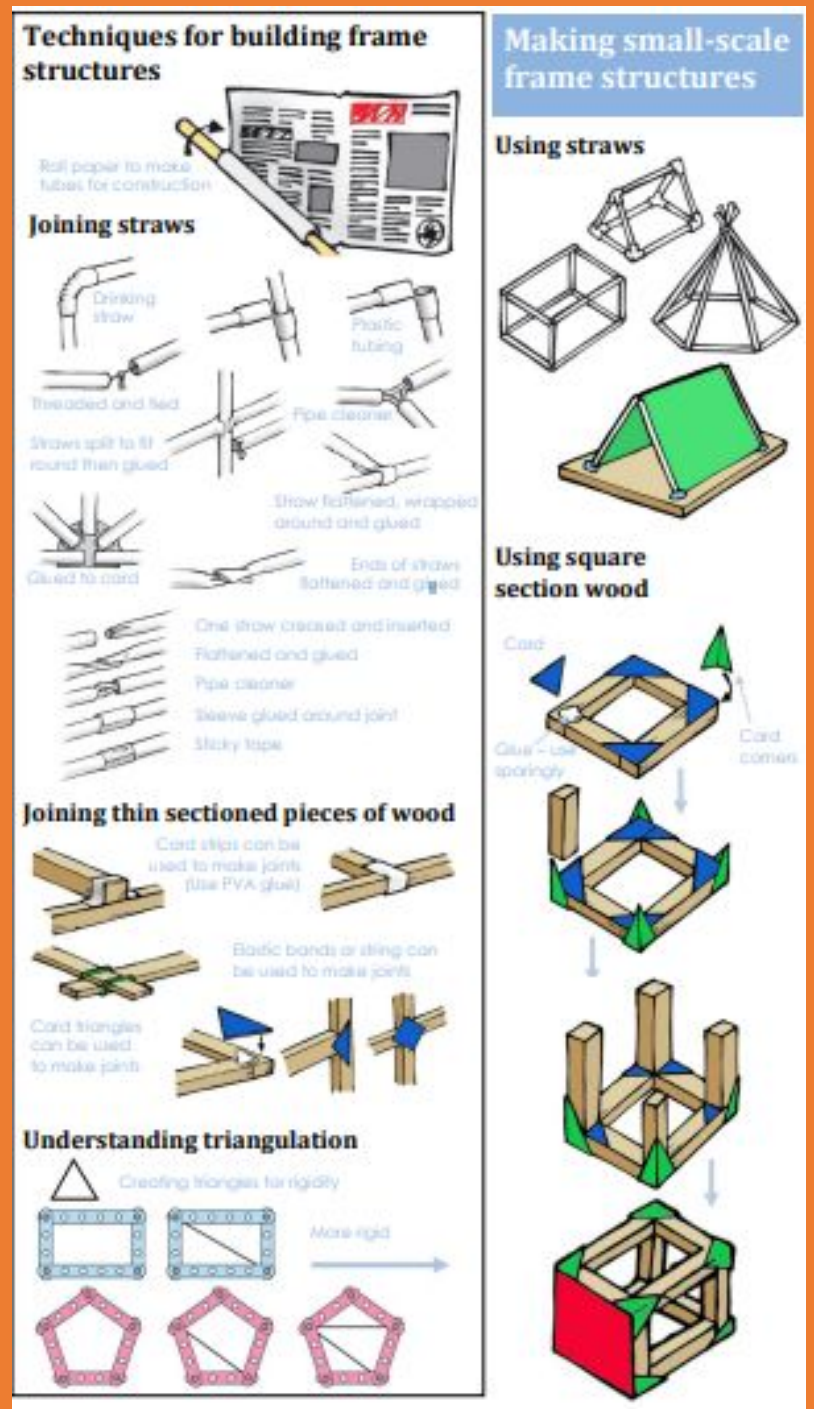
- Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.
- Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

Evaluating

- Compare the final product to the original design specification.
- Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.
- Consider the views of others to improve their work.
- Investigate famous manufacturing and engineering companies relevant to the project.

Technical knowledge and understanding

- Understand that mechanical systems have an input, process and an output.
- Understand how cams can be used to produce different types of movement and change the direction of movement.
- Know and use technical vocabulary relevant to the project.



Vocabulary

frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary, permanent

design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional

Prior learning

- Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.
- Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.

Burradon Community Primary School - Year 5
DT - Frame Structures

Glossary

- **Modelling** – the process of making a 3-D representation of a structure or product.
- **Compression** – the application of pressure to squeeze an object.
- **Strut** – a part of a structure under compression.
- **Tension** – a force pulling on a material or structure.
- **Tie** – a part of a structure under tension.
- **Diagonal** – a straight line that goes from one corner to another inside a shape.
- **Horizontal** – a line that is parallel to the ground.
- **Vertical** – a line that is at right angles to the ground.
- **Triangulation** – the use of triangular shapes to strengthen a structure.
- **Frame structure** – a structure made from thin components e.g. tent frame.

Designing

- Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.
- Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.
- Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.

Making

- Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.
- Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.
- Use finishing and decorative techniques suitable for the product they are designing and making.

Evaluating

- Investigate and evaluate a range of existing frame structures.
- Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.
- Research key events and individuals relevant to frame structures.

Technical knowledge and understanding

- Understand how to strengthen, stiffen and reinforce 3-D frameworks.
- Know and use technical vocabulary relevant to the project.

Possible products

biscuits | savoury scones | savoury muffins

Possible techniques that children could use

Mixing to combine ingredients if making savoury muffins or scones

Rubbing in to mix fat and flour if making a yeast-based product

Kneading a bread dough

Sensory evaluation

When carrying out sensory evaluations of products and/or separate ingredients, begin with a whole class activity then use group work to develop ideas.

Example of a recording table:

Type of cultural/seasonal food product	Appearance	Smell	Texture	Taste
Savoury scone	Golden/rough	Fresh/baked	Crumbly	Cheesy

Children can also use simple ranking and rating tables as well as star diagrams.

Use packaging and/or the internet to find out about the nutritional content of the food products and the ingredients. Link this to the principles of a healthy and varied diet.

Edible plants grown in the school grounds can also be evaluated and considered as potential ingredients for products the children will later design, make and evaluate. The benefits/difficulties of selecting seasonal, organic and/or locally sourced ingredients can be discussed here.

Vocabulary

ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs

fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality

utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble

design specification, innovative, research, evaluate, design brief

Prior learning

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.
- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.

Burradon Community Primary School - Year 5
DT – Food Culture and Seasonality

Glossary

- **Finishing** – related to the appearance of the product – shape, decoration and colour.
- **Rubbing in** – rubbing the dry ingredients together with the fat, lifting to put air into the mixture, so that it resembles fine breadcrumbs.
- **Knead** – pulling and squeezing dough to make it smooth.
- **Bran** – the hard, protective shell of a grain of wheat.
- **Dough** – a mixture of flour, yeast and water before it is cooked.
- **Endosperm** – the store of food inside a seed.
- **Germ** – part of the seed where the root and shoots grow from.
- **Yeast** – a tiny plant which makes bubbles of carbon dioxide when mixed with flour and warm water.
- **Unleavened bread** – flat bread where yeast has not been added.

Designing

- Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.
- Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.
- Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.

Making

- Write a step-by-step recipe, including a list of ingredients, equipment and utensils
- Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.
- Make, decorate and present the food product appropriately for the intended user and purpose.

Evaluating

- Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.
- Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.
- Understand how key chefs have influenced eating habits to promote varied and healthy diets.

Technical knowledge and understanding

- Know how to use utensils and equipment including heat sources to prepare and cook food.
- Understand about seasonality in relation to food products and the source of different food products.
- Know and use relevant technical and sensory vocabulary.

Possible products

biscuits | savoury scones | savoury muffins

Possible techniques that children could use

Mixing to combine ingredients if making savoury muffins or scones

Rubbing in to mix fat and flour if making a yeast-based product

Kneading a bread dough

Sensory evaluation

When carrying out sensory evaluations of products and/or separate ingredients, begin with a whole class activity then use group work to develop ideas.

Example of a recording table:

Type of cultural/seasonal food product	Appearance	Smell	Texture	Taste
Savoury scone	Golden/rough	Fresh/baked	Crumbly	Cheesy

Children can also use simple ranking and rating tables as well as star diagrams.

Use packaging and/or the internet to find out about the nutritional content of the food products and the ingredients. Link this to the principles of a healthy and varied diet.

Edible plants grown in the school grounds can also be evaluated and considered as potential ingredients for products the children will later design, make and evaluate. The benefits/difficulties of selecting seasonal, organic and/or locally sourced ingredients can be discussed here.

Vocabulary

ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs

fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality

utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble

design specification, innovative, research, evaluate, design brief

Prior learning

- Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.
- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.

Burradon Community Primary School - Year 6
DT – Food Culture and Seasonality

Glossary

- **Finishing** – related to the appearance of the product – shape, decoration and colour.
- **Rubbing in** – rubbing the dry ingredients together with the fat, lifting to put air into the mixture, so that it resembles fine breadcrumbs.
- **Knead** – pulling and squeezing dough to make it smooth.
- **Bran** – the hard, protective shell of a grain of wheat.
- **Dough** – a mixture of flour, yeast and water before it is cooked.
- **Endosperm** – the store of food inside a seed.
- **Germ** – part of the seed where the root and shoots grow from.
- **Yeast** – a tiny plant which makes bubbles of carbon dioxide when mixed with flour and warm water.
- **Unleavened bread** – flat bread where yeast has not been added.

Designing

- Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.
- Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.
- Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.

Making

- Write a step-by-step recipe, including a list of ingredients, equipment and utensils
- Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.
- Make, decorate and present the food product appropriately for the intended user and purpose.

Evaluating

- Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.
- Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.
- Understand how key chefs have influenced eating habits to promote varied and healthy diets.

Technical knowledge and understanding

- Know how to use utensils and equipment including heat sources to prepare and cook food.
- Understand about seasonality in relation to food products and the source of different food products.
- Know and use relevant technical and sensory vocabulary.

Zip

Velcro

Clasp

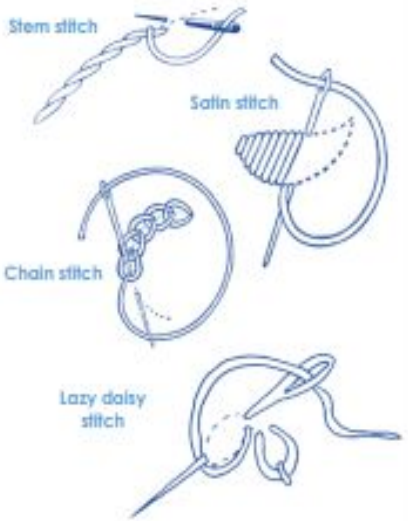
Toggles

Ties

Buttons

Press studs

Stitches



Using stitches as a finish for the product.

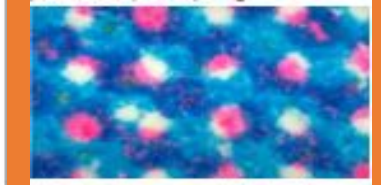
The children could design their finish for their product using a variety of appropriate stitches. They could draw enlarged examples of e.g. insects, flowers, animals and then decide which stitch would be best for each part. Use square paper for a grid to ensure the stitches are in the right place and are the right size.

Appliqué

Embroidery

Tie Dye

Children could decorate their fabric before they make up their product by tie dyeing.



The key to success is to tie the fabric very tightly with e.g. rubber bands or string so that the dye is prevented from reaching that part of the fabric.

Vocabulary

seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces

name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper

design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype

Prior learning

- Experience of basic stitching, joining textiles and finishing techniques.
- Experience of making and using simple pattern pieces.

Burradon Community Primary School - Year 6
DT – Textiles

Glossary

- **Mock up** – quick 3-D modelling using easy to work and cheaper materials and temporary joints. Useful for checking proportions and scale.
- **Pattern or template** – a shape drawn to exact shape and size, used to assist in cutting out.
- **Seam allowance** – extra fabric allowed for joining together - 15mm for domestic patterns.
- **Specification** – describes what a product has to do.
- **Tacking** – large running stitches to hold pieces of fabric together temporarily.
- **Working drawing** – detailed drawing contains all information needed to make a product but is updated as changes are made.

Designing

- Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.
- Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.
- Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.

Making

- Produce detailed lists of equipment and fabrics relevant to their tasks.
- Formulate step-by-step plans and, if appropriate, allocate tasks within a team.
- Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost.

Evaluating

- Investigate and analyse textile products linked to their final product.
- Compare the final product to the original design specification.
- Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.
- Consider the views of others to improve their work.

Technical knowledge and understanding

- A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.
- Fabrics can be strengthened, stiffened and reinforced where appropriate.

Switches and sensors

Latching switch

Micro-switch

Light-dependent resistor (LDR)

Push-to-make switch
When you push, the electricity flows through the circuit, but when you release it the circuit is broken and the switch is off.

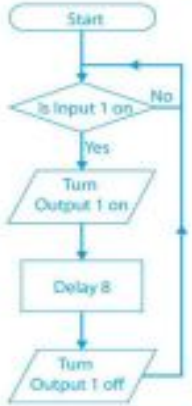
Push-to-break switch
The switch is off while the button is pushed, but returns to its 'on' position when button is released.

- Micro-switch – a switch that can operate as push-to-break switch or a push-to-make switch.
- Push-to-break switch – a switch turned off by pressing it.
- Push-to-make switch – a switch turned on by pressing it.
- Reed switch – a switch operated by a magnet.
- Tilt switch – a switch that works when tilted at an angle.
- Toggle switch – a switch operated when a lever is pressed.
- Light dependent resistor (LDR) – a sensor that operates when light is shined on it.

Reed switch
Activated by a magnet which closes the contacts.

Tilt switch
When tilted a ball bearing bridges the contacts inside, completing the circuit.

Standalone control box



Example control program

Interface control box

- Children need to learn how to write a sequence of instructions where a decision is made e.g. when a switch is pressed a buzzer is activated.
- They use a 'control language' or create a flowchart to produce a series of instructions.
- Children's computing knowledge and skills need to focus on using input and output devices connected to a standalone box or interface box.
- They use their learning in computing to control and monitor products they have designed and made e.g. alarm system.

Vocabulary

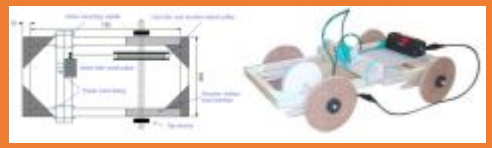
series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart

function, innovative, design specification, design brief, user, purpose

Prior learning

- Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.
- Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.

Burradon Community Primary School - Year 6
DT – Complex Electrical Systems



Glossary

- **Modelling** – to realise and manipulate ideas in a tangible form.
- **Open switch** – when a switch is positioned such that electricity cannot flow through it.
- **Closed switch** – when a switch is positioned such that electricity can flow through it.
- **Normally open** – the term used to describe when a switch is in the off position, i.e. the switch is open and no electricity can flow when the button on not pressed.
- **Normally closed** – the term used to describe when a switch is in the on position i.e. the switch is closed and electricity can flow when the button is not pressed
- **Computer control input** – when a switch, such as a micro switch, sends a signal to a computer control box to activate a sequence of events such as a buzzer or light being used to attract attention or alert people.
- **Output devices** – components that produce an outcome e.g. bulbs and buzzers.
- **Input devices** – components that are used to control an electrical circuit e.g. switches or sensors.

Designing

- Use research to develop a design specification for a functional product that responds automatically to changes in the environment. Take account of constraints including time, resources and cost.
- Generate and develop innovative ideas and share and clarify these through discussion.
- Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.

Making

- Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.
- Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.
- Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.

Evaluating

- Continually evaluate and modify the working features of the product to match the initial design specification.
- Test the system to demonstrate its effectiveness for the intended user and purpose.
- Investigate famous inventors who developed ground-breaking electrical systems and components.

Technical knowledge and understanding

- Understand and use electrical systems in their products.
- Apply their understanding of computing to program, monitor and control their products.
- Know and use technical vocabulary relevant to the project.