DT: EYFS

red = skills, yellow = knowledge

Early Learning Goal - Expressive Arts and Design: Exploring and using media and materials: Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
Early Learning Goal - Expressive Arts and Design: Being Imaginative: Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.
Early Learning Goal- Physical Development-Health and Self-Care: Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe

Reception

Making a model with moving parts
1) To be able to draw pictures before starting to build and create e.g. pictures of railway tracks, buildings, obstacle courses.
2)To be able to share their work with their friends and discuss their process or intention.
3) To know how to fasten objects together using pegs, glue and tape.
4)To be able to cut using scissors.
5) Know how to use a slit and split pins

Tier 2: Push pull, glue tape, cut, stick	Tier 3: Staples, split pins, Pipe cleaners, straws		

KS1 Mechanical and Electrical Systems (Golden thread 'System')

	Designing	Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes *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 [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*build structures, exploring how they can be made stronger, stiffer and more stable* *explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*
Year 1	*Problem: I want to make the Gruffalo picture book more exciting for nursery* *1) To identify how moving pictures work. What is it? Who is it for? How does it work?* *4) To use own experience to design my moving picture. E.g. Talking through what I will do next. Decide how do you want it to move? Will you use a lever or a slider?* • *Use key words in a simple design criteria list provided to them to help develop their ideas.* • *Use some sketching and annotate (where appropriate) when communicating ideas.* • Plan by suggesting what to do next verbally.	*2) To be able to make a slider L.O.* *3) To be able to make a lever move.* *4) To know which tools I need to make a lever or slider* *5) and 6) To use all skills learned to make my moving picture* • Select from a limited range of tools, materials and components.	*6). To evaluate my moving picture against the success criteria* • Make simple judgements about their products and ideas against simple design criteria. • Suggest how their products could be improved.	1), 2) To know that a slider makes images move forwards and backwards or up and down. 1(, 3) To know that a lever makes images move around a pivot *2) To understand how a slot can be used to make a slider* *3)To know that a split pin can be used to make a lever*
	Tier 2 left, right, push, pull, up, down, forwards, backwards, ideas, curve, *Tier 3Lever, pivot, slider,*	*Tier 2 card, masking tape,* *Tier 3 slot, split pin,*	*Tier 3 Design criteria*	*Tier 3 pivot*
	Innovator: Busy books Illustrator Louise Forshaw			
Year 2	*Problem: King Charles II wants to transport water to a fire* *1) To identify how a range of toy modern fire engines move. (Explore the numbers, size, fixing of wheels)* *3) To use own experience of likes and dislikes to design my moving vehicle through drawings and mock-ups* • *Introduction to drawing a cuboid on squared paper* • *Use simple design criteria provided to them to help develop their ideas.* • Plan by describing what to do next verbally.	*2) To use construction kits to make a vehicle that moves with a chassis, wheels and axels.* *4) To know which tools I need to make a fire engine (Show children how to mark out, hold, cut and join materials)* • *Select from a range of tools with support. Select materials and components showing some consideration for their characteristics.* *5)and 6) To use all skills learned to make my moving fire engine* *6) Use ICT to consider finishing touches on fire engine. (Clipart or word processing)*	*3) To evaluate my designs throughout* *6) To evaluate my product against our design criteria. (Also include any changes made to the design)* • Explain what is good about their product based on design criteria. • Suggest how their products could be improved.	*A chassis is the frame of a vehicle* *The wheels must be fixed to an axel* *The axels must run freely within the holders for the engine to move easily.*
	Tier 2: design, make, free moving *Tier 3: Body, chassis, wheels, axels, dowel, axel holders, cab, purpose, design criteria*		*Tier 2 Design criteria* *Tier 3: Evaluate*	
	Innovator: Henry Ford			

KS2 Mechanical and Electrical Systems

	Designing		Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes	*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 [for example, cutting, shaping, joining and finishing], accurately* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*
Year 3	*Problem: I want to send an exciting Christmas card to my family* *3) To generate realistic ideas by drawing on own experience to design my Christmas card* • *Children to decide who their card is for and create a design criteria. Choose some key words for design criteria to guide their thinking.* • *To use orthographic (view of front and of mechanism) sketches to communicate ideas.* • *Use annotated sketches with key parts labelled and prototypes to model and communicate ideas*		*2) To be able to make systems with levers and linkages to include a fixed and loose pivot. Which card strip is the lever? Which is acting as the linkage? Which part of the system is the input and which is the output? Which are the fixed pivots and which are the loose pivots?* *4) To know which tools to use to cut, shape and join paper and card* *4) To use skills I have learned to plan main stages in making* *5 and 6)To use all skills learned to make my Christmas card* • *Plan by describing what to do next verbally or written.* • *Select tools appropriate to the task. Select materials and components suitable for the task according to their characteristics.*	*1) To investigate, analyse and evaluate a range of books Who might it be for? What is its purpose? What part moved and how did it move? What materials have been used?* *6). To evaluate my Christmas card against the design criteria and user needs* • Use their own design criteria to say what is good about their product and what needs improving.	*2) A lever is a rigid bar that moves around a pivot (Revisit)* *1) and 2) Card strips join one or more levers to make a linkage* *2) A guide is used to keep the lever or linkage in place* *2) A loose pivot is a paper fastener that joins card strips together* *2) A fixed pivot is a paper fastener that joins card strips to the backing card* *1) and 2) A system has an input (where the user pushes or pulls a card strip), a process and an output (where one or more parts of the picture move).*
	Tier 2 lever, bridge, guide *Tier 3 Mechanism, slot, appealing, innovative*		*Tier 2*	*Tier 2 Design criteria* *Tier 3 oscillating, reciprocating*	*Tier 2 Pivot* *Tier 3 Linkage, system, process, input, output*
	Innovator: Lothar Meggendorfer				
Year 4	*Problem: I can't see where to go when there is a power cut* *4) To develop a simple design specification and refer to it when designing* *5) To apply prior knowledge to design my torch* • *Generate a range of ideas by drawing on their own experiences that show consideration of the needs of the target market.* • *To be able to use cross-sectional drawing to communicate ideas.*		*3) To know how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzer. (Revisit from science)* *5) To use skills I have learned to plan main stages in making and select appropriate tools and components* • Plan by identifying what to do next by ordering the main steps verbally or written. *6 and 7) To use all skills I have learned to make my torch* • *Identify correct tools and equipment, select materials and components suitable for the task according to their properties.*	*1) To investigate, (where practical) disassemble different examples of battery-powered torches. Where and why are they used? How does the product work? What are its key features and components? How does the switch work? What materials have been used and why? How is it suited to its intended user? (images can also be used)* *2) To investigate examples of switches and how they work. E.g. Push to make, push to break, toggle switch.* *7). To evaluate my torch against the design criteria and user needs.* • Refer to their design criteria as they design and make.	*2) A push to break switch is off while the button is pushed but returns to its on position when released.* *2) A 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.* *3) To know how to make a secure connection* *a) Tape with insulating tape* *b) Wrap wire ends around together* *c) When using a bulb holder bend the wire around the screw in the direction of turning when tightening.* *This is an electrical system Input= switch Output = light*
	Tier 2 *Tier 3 Output devises, input devices, conductor, insulator*		*Tier 2 Manually controlled* *Tier 3, simple series circuit*	*Tier 2 Design criteria, components* *Tier 3 Disassemble, push to break switch, Push to make switch*	*Tier 2* *Tier 3 Electrical System*
	Innovator:Michael Faraday				

Year 5	*Problem: I want to entertain a child illustrating their favourite story* *3) To be able to generate ideas focus on the needs of the target market and research.* *4) To develop my own design criteria and use this to inform my ideas* *5) To use cross-sectional drawings to develop and communicate their ideas.* • *Drawings should indicate design decisions made, including location of components, how they work as a system and the appearance and finishing techniques.)*	*2)To know how to create rotary, oscillating and reciprocal movement using cams. (This is done through exploring with different cams)* *4)To know how to measure, mark, saw and join materials safely. (Use G clamps, bench hooks, saws)* *6) To use skills I have formulate a step by step plan including a list of tools, equipment and materials needed.* • Plan by explaining what to do next by ordering the main step, including processes that involve a series of steps verbally or written. • *Identify tools needed for different stages. Select and explain their choice of materials and components according to functional properties.* *7) To use all skills I have learned to make my cam toy*	*1) To investigate different mechanical systems using cam. Use toys, videos, photographs and computer animations of products. (Identify different types of movement: rotary, oscillating and reciprocating.)* *8). To critically evaluate my cam toy against my design criteria and user needs. (Look at the quality of design, the manufacture, functionality, innovation shown and fitness for the intended user and purpose)* • *Evaluate their ideas and products against their original design criteria*	***Rotary motion** – movement that goes round.* ***Linear motion** – movement that goes in a straight line* ***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.* *This is a mechanical system input= handle* *Output= movement of the follower/image*
	Tier 2 level, guide, spacer *Tier 3 Isometric, component, follower, cam*	*Tier 2* *Tier 3 oscillating, reciprocal*	*Tier 2* *Tier 3 Automata*	*Tier 2 Mechanism* *Tier 3 Linear, rotary*
	Innovator: Cabaret Mechanical Theatre			
Year 6	*Problem: I want a vehicle to enter the race without me having to push it.* *2)To be able to use a computer program to design a chassis.* Challenge: can children include a pulley or gear system? *5) To be able to generate ideas by carrying out survey, interview or questionnaire with client.* *6) To write a simple design specification to fit the users' needs* *7) Use annotated exploded diagrams to develop and communicate their ideas.* • *Use computer-aided design to develop and communicate their ideas.*	*3)To know how to use different sized gears to produce movement (How many times does the smaller pulley turn each time the larger pulley turns once? Do the pulleys move in the same direction? How can you reverse the direction of rotation?)* *4)To know how to make an electrical and mechanical system using a range of switches* *8) To use skills I have learnt to produce detailed list of tools, equipment and materials and formulate step by step plans.* *9) To use all the skills I have learned to make my moving car.*	*1)To be able to investigate, analyse and evaluate existing products which use gear of pulley systems.* *(How innovative is the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What are the input, process and output of the system?)* *10)To compare the final product to the original design specification and identify improvements* *(Critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.)*	*1)To know pioneers in automobile engineering.* *3)To know that combinations of two different sized pulleys or two different sized gears affect the direction and speed of the rotation.* *Gears and pulleys can be used to speed up, slow down or change the direction of movement* *This is an electrical system input= switch* *Output= movement of the car*
	Tier 2 *Tier 3 Design specification, exploded diagram,*	*Tier 2circuit, axel, motor, switch, reverse, toggle, vice, saw, Dowling, bench hook* *Tier 3 Mesh, Driver, Drive belt,*	*Tier 2 Design criteria, components, functionality,* *Tier 3 Disassemble, Gears, Pulleys, Innovative,*	*Tier 2 Electrical system,* *Tier 3 Pioneers*
	Innovator: Dorothee Pullinger A pioneer who built a car for women			

STRUCTURES

	Designing	Making	Evaluating	Technical Knowledge
Reception	*Making a waterproof house for Incy Wincy Spider* 1) To be able to build with small wooden blocks, Lego, Duplo, large wooden blocks and bricks. 2)To be able to create models by joining together recycled materials 3)To be able to build railway tracks, roads and pathways. 4)To be able to make dens. 5) To be able to plan a model for a purpose			
	Tier 2: Stack, Stable, Secure	Tier 3: Minaret, tower,		

	Designing		Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes	*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 [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products evaluate their ideas and products against design criteria*	*build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*
Year 1	***Problem: Your character needs a room in a house*** ***4)*** *To use my own experiences to design a room for a dolls house* *Who will your product be for? What will be its purpose? What materials will you use? How will you make it strong and stable? Use some sketching and mock-ups to develop ideas.* • *Use key words in a simple design criteria list provided to them to help develop their ideas.* • Draw/describe an idea by drawing on their own experiences. • Use some sketching and annotating to communicate ideas. *5) Plan the order in which the structure will be made* • Plan by suggesting what to do next verbally		*3) To practise joining methods to make a strong, stable structure (How can you stop structures from falling over? How can they be made stronger and stiffer to carry a load?* *5 and 6) Use my knowledge to make a strong, stable structure strong enough for their user (e.g. Lego figure)* • *Select from a limited range of tools, materials and components.*	*1) To investigate dolls houses. What rooms can children see? How do you know which rooms they are? What materials have been used? How have the parts been joined together? How have they been made strong enough? How have they been made stable?* *2)To know the features of different rooms in a dolls house. (Draw and label the structures in the dolls house using the correct technical vocabulary. Focus on the materials and shapes used.)* *6))To decide if my product meets my design criteria* • *Suggest how their products could be improved.*	*1, 2 to know that products are designed for a purpose* *3) Know that folding materials will make them stronger and stiffer in order to stand up and make them stable*
	Tier 2 *Tier 3Design, purpose, product, structure*		*Tier 2 Stiff, Strong, stable, weak, cut fold, join, fix* *Tier 3 Stability, shell structure, mock -up*	*Tier 2: wood, metal, rectangle, square, triangle* *Tier 3 Cube, cuboid, evaluate, cylinder, function*	*Tier 3*
	Innovator: Dame Zaha Hadid - Architect				

KS2

	Designing		Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes	*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 [for example, cutting, shaping, joining and finishing], accurately* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*
Year 3	***Problem: I keep losing all my equipment on my desk at home.*** *2)To be able to use ICT to design a net (Google Draw)* *4)To generate some realistic ideas by drawing on their own experience* • *Choose some key words for design criteria to guide their thinking. What does the product need to do? Who is it aimed at? How will the purpose and user affect your design decisions?* • Generate some realistic ideas by drawing on their own experience • *To begin to use 3D sketches on squared paper and prototypes with key parts labelled to communicate ideas*		*2) To know how to assemble and evaluate 3D shapes using squares, rectangles, equilateral triangles and hexagons* *3) To know how to stiffen and strengthen sheet materials* *3) to know how to score, cut out and assemble nets and the materials and tools needed* *5) To use all skills I have learned to make my desk tidy* • Plan by describing what to do next verbally or written. • Select tools appropriate to the task. • Select materials and components suitable for the task according to their characteristics.	*1) To investigate different shell structures including packaging (What is the purpose of this packaging?-Presenting, protecting or containing? What material is it made from? How has it been constructed? Are the materials recycled or reusable? How has it been stiffened? What information does it show or why? How attractive is the design?)* *1) To evaluate existing products and nets to determine which designs are the most effective (Discuss graphics, colours, impact, style, logos, size of fonts, e.g. What do you prefer and why? Investigate nets how are the different faces of the package are arranged?)* *6) Use their own design criteria to say what is good about your product and what needs improving.*	*3) Sheet materials can be stiffened and strengthened by* *a) Laminating – gluing together several layers of card* *b) Corrugating – zig zag a piece of paper or card and glue in between two layers of card* *c) Ribbing – Glue layers of straws between layers of card*

	Tier 2 Design criteria *Tier 3*	*Tier 2: Reduce, reuse, recycle, text graphics, font* *Tier 3:Marking out, scoring, tabs,*	*Tier 2, shell structure, 3D shapes* *Tier 3 Edge, face, vertex,*	*Tier 2* *Tier 3 Laminating, Corrugating, ribbing*
	Innovator: Knut Hagberg& Marianne Hagberg			
Year 5	***Problem: A child needs a marble run which is free standing.*** *3) To develop ideas through orthographic drawings from an existing design specification. (How will you make it stable? How will it stand up? How could you make it stronger? What are the weak points? How could you reinforce them? How can you improve the design? Which tecnigues will you use to engineer your tubes?)* *3) To Use computer-aided design to develop and communicate their ideas* *Home Learning after L1: To be able to generate ideas focus on the needs of the target market and research.* *4) To use skills and knowledge to make a clear plan and list of resources* • Plan by explaining what to do next by ordering the main step, including processes that involve a series of steps verbally or written. • Identify tools needed for different stages. Select and explain their choice of materials and components according to functional properties.	*2) To know cardboard can be engineered by a range of techniques. (see sticky knowledge) (FPT)* *5) To use the skills I have learnt to make my marble run evaluating and testing as I go*	*1) To investigate what makes a good marble run. (What are their purpose? What materials were used and why were they chosen? What methods of construction have been used? How does the shape of the framework affect its strength? How innovative is the design? When was it made? Who made it? Where was it made?* *6) To evaluate the final prototype and know how to theme a project for the intended user.*	*2)Brackets are the use of triangular shapes to strengthen a structure* *2)Scoring cardboard makes it easier to bend or fold.* *2) flange joints are used to connect pipes and tubes.* *2)Tabs are used to join two pieces of cardboard together.*
	Tier 2 *Tier 3 Design specification, innovative, client*	*Tier 2 structure, stable,* *Tier 3 reinforce, triangulation, frame*	*Tier 2 theming, modelling* *Tier 3 Stut, prototype*	*Tier 2 scoring, tabs* *Tier 3 flange, brackets,*
	Innovator: Tom Karen OBE			

	Designing	**Making**	**Evaluating**	**Technical Knowledge**
Reception	To be able to thread beads on strings To be able to cut using scissors. To design clothes for cuddly toys			

	Tier 2: Thread, cut, design	Tier 3: Costume, repeating pattern		

KS1 Textiles

	Designing	Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes *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 [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products evaluate their ideas and products against design criteria*	*build structures, exploring how they can be made stronger, stiffer and more stable* *explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.*
Year 2	*Problem: Your client wants an artic animal puppet to play with* *2) To investigate different fabrics to decide on a success criteria – (As a class decide a functional and appealing product for a chosen user and purpose* *2)To use own experience of likes and dislikes to design animal puppet.* *Be able to use orthographic sketches to communicate ideas of my design.* *(what parts will the product need to have and what will it be made from? What size will it be? How will it be joined and finished?* • Use simple design criteria provided to them to help develop their ideas.	*3) To be able to use an over sew stitch to create a mock-up of my puppet.* *4) To explore skills needed to make my puppet* - *how to attach a template to my fabric. Clear tape, mark out or pin the fabrics to templates* - *finishing techniques e.g. Buttons, sequins, fabric paint* • Plan by describing what to do next verbally. • Select from a range of tools with support. Select materials and components showing some consideration for their characteristics. *5) To use all skills learned to make a puppet.*	*1) To investigate and compare puppets. (Look at fabrics, joining techniques, finishing techniques and fastenings used)* *6)To evaluate my puppet against our design criteria.* • Explain what is good about their product based on design criteria. • Suggest how their products could be improved	*3.Fabric can be joined by over sewing, gluing, stapling, or pinning* *3.I know how to thread a needle* *4) To cut my fabric to the right size I can* *-stick my template on the fabric with Sellotape* *-Draw around my template with chalk* *-Pin my template to the fabric*
	Tier 2 design. Purpose *Tier 3, function, embroider*	*Tier 2 join, decorate, finish, seam, sew* *Tier 3 template, pattern, applique, mock up*	*Tier 2: evaluate* *Tier 3*	*Tier 3*
	Innovator: Jim Henson			

KS2 Textiles

	Designing	Making	Evaluating	Technical Knowledge
	Understanding contexts, users and purposes *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 [for example, cutting, shaping, joining and finishing], accurately* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*
Year 4	***Problem: I keep losing all my coins*** *3) To make labelled drawings from different views showing specific features. (Produce mock-up or prototype)* • Develop their own design criteria and use these to inform their ideas. • Generate a range of ideas by drawing on their own experiences that show consideration of the needs of the target market. • Use annotated sketches to communicate their ideas. • *To use 2D computer-aided design to develop their ideas.*	*4)To be able to sew using running stitch and back stitch.* • Plan by identifying what to do next by ordering the main steps verbally or written. • Identify correct tools and equipment, select materials and components suitable for the task according to their properties. *5) To use all skills learned to make a money container.*	***1)To be able to examine a collection of simple textile containers (Identify criteria that can be used for their own designs.) Look at stitches, joins, fabrics, finishing techniques, fastenings and purposes. Disassemble products, look at seam allowances*** ***2) To know which fabric meets functional requirements. (Tests to carry out strength, waterproofness or flexibility.)*** ***6. To evaluate my money container against our success criteria.*** • **Refer to their design criteria as they design and make.**	*1) To know a seam allowance is extra fabric allowed for joining together usually 1.5cm* *3) To know that some joining techniques are stronger/weaker than others* *A back stitch is used to attach two pieces of material together.* *5) To know that plastic strips cut from folders , or plastic plant 'canes' are flexible and can be bent but then they spring back to straightness*
	Tier 2 *Tier 3 Prototype, innovative*	*Tier 2:* *Tier 3: Mock up*	*Tier 2 compartment, zip, button,* *Tier 3: finishing technique*	*Tier 2* *Tier 3 Seam, seam allowance*
	Innovator: Cath Kidston			

Year 6	***Problem: My feet get cold when I'm at home*** *3. To be able to generate design ideas by conducting a survey.* • Develop a simple design specification to guide their thinking and designing. *4. Use annotated orthographic drawings to develop and communicate their ideas and justify in a convincing way.* •	*5. To be able to sew using running stitch, back stitch and blanket stitch.* *6. To be able to create a pattern for a pair of slippers.* *7.To be able to produce a step by step plan.* *8. To use all skills learned to make a pair of slippers.* • Formulate step-by-step plans as a guide to making. • Produce appropriate lists of tools, equipment and materials that they need for each stage of making. • Select and explain their choice of suitable materials and components according to functional properties and aesthetic qualities.	*1)To investigate, analyse, disassemble and evaluate a range of existing products. (Look at the fabric shapes, how have the parts been joined? How has the product been strengthened or stiffened? What fastenings have been used? What has been used to enhance the design appearance? Is the design innovative?* *2)To evaluate fabrics and compare results using a radar chart. (Do the materials match the intended purpose?)* *9.To be able to compare final product to the original specification and identify improvements.*	*2) To know that certain materials are more suitable for different purposes.* *5) To know a blanket stitch is a stitch is used to reinforce the edge of thicker materials* *6) A pattern is the template from which the parts of a garment are traced onto fabric before being cut out and assembled.*
	Tier 2 Annotate, mock up *Tier 3 Design specification, prototype, innovation, functional, working drawing, Working drawing*	*Tier 2 pattern/template, , right side, wrong side, reinforce* *Tier 3 Wadding, tacking, , hem*	*Tier 2* *Tier 3*	*Tier 2* *Tier 3 Seam allowance, seam*
	Innovator: Jimmy Choo			

D&T: Food EYFS

red = skills, yellow = knowledge

Early Learning Goal - Expressive Arts and Design: Exploring and using media and materials: Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
Early Learning Goal - Expressive Arts and Design: Being Imaginative: Children use what they have learnt about media and materials in original ways, thinking about uses and purposes.
They represent their own ideas, thoughts and feelings through design and technology, art, music, dance, role play and stories.
Early Learning Goal- Physical Development-Health and Self-Care: Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe

	Designing	Making	Evaluating	Technical Knowledge	
Reception	*Using rolling pins and cutters to make biscuits.* To know how to use a knife and fork To know how to pour water into a cup To know how to carry a plate full of food To be able to spread using a knife. To be able to peel an orange To be able to sprinkle. To be able to mix ingredients To be able to measure ingredients using non standard measures.				Design and make biscuits Make playdough Make an ice lolly
	Tier 2: Pour, cut, spread, sprinkle, peel, mix, measure				

KS1 Food

	Designing	Making	Evaluating	Technical Knowledge	Cooking and Nutrition

	Understanding contexts, users and purposes	*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 [for example, cutting, shaping, joining and finishing]* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*Some foods are healthy and some are unhealthy.* *Where foods come from.* *Knives and kitchen equipment should be used accurately and safely.* *Hands and equipment need to be clean so that it is hygienic.* *Where in the world? To know where different fruits come from (UK / somewhere else in the world)* *Key Vocabulary*	♣ use the basic principles of a healthy and varied diet to prepare dishes ♣ understand where food comes from. Golden Thread…to understand where food fits into the balanced plate/food wheel. 
Year 1	*Problem: Someone in your family wants a fruit snack* 2. To design a fruit snack based on what my family would like. • Use key words in a simple design criteria list provided to them to help develop their ideas. • To use own experience to generate initial ideas and design criteria through investigating a variety of fruits. *3. To use drawings to communicate my ideas* • To communicate these ideas through talk and annotated drawings.	*4.To select from a range of fruits according to their characteristics e.g. colour, texture and taste to create a chosen product.* 5. To know which tools to use *e.g. peel, cut, slice, squeeze, grate and chop safely.* • Plan by suggesting what to do next verbally. • Select from a limited range of tools, materials and components.	*1. To taste and evaluate a range of fruits that your family would like to eat.* *6.To evaluate ideas and finished products against design criteria* • Suggest how their products could be improved.	Some foods are healthy, and some are unhealthy. Fruit is healthy. Understand where fruits fit into the balanced plate. Fruits are grown as plants. Knives must be used safely using the bridge hold. Hands and equipment need to be clean and hair should be tied back so that it is hygienic. A kebab consists of fresh and/or cooked ingredients on a skewer **Where in the World?** Strawberries, apples, pears and plums are grown in the UK Bananas, mangoes, kiwi fruits, melons and grapes are grown in other parts of the world	Cheese topped garlic and herb bread – Seasonality focus with regard to herbs https://www.melissassouthernstylekitchen.com/cheesy-garlic-and-herb-bread/ Practise key skills: Grating, cutting, spreading, melting, toasting **Food safety**: Preparing to Cook - Washing hands, hair back, apron on. Wiping tables **Consumer awareness**: Wheat – how it grows and what we use it for?
	Tier 2 fruit, kebab *Tier 3 Design criteria*	*Tier 2 peel, cut, slice, squeeze, grate, chop, colour, texture, taste* *Tier 3 equipment, utensils, pith, nutrients*	*Tier 2 product purpose* *Tier 3 evaluation, user, preference*	Tier 2: healthy food, unhealthy, cut, chop, plants balanced diet, fruit *Tier 3 bridge hold, hygiene, skewer*	Tier 2: Taste, smell, clean, germs, wheat, season Tier 3: Harvest,
	Food Hero: Nadiya Hussein				
Year 2	*Problem: Someone in your family wants a smoothie as a healthy snack* *2.. To think what I would like my smoothie to be like* • Generate a few ideas by drawing on their own experiences and likes/dislikes • Use simple design criteria provided to them to help develop their ideas. 4.*To communicate these ideas through talk and introduce an exploded diagram* • Use sketches to communicate ideas. • Use information and communication technology, where appropriate communicate their ideas	*3.To select from a range of fruits, yoghurts, juices, milk and milk alternatives according to their characteristics* e.g. colour, texture and taste to create a chosen product. 5.To know which utensils and equipment to use to peel, cut, slice, squeeze, grate and chop safely. • Plan by describing what to do next verbally. • Select from a range of tools with support. • Select materials and components showing some consideration for their characteristics.	*1. To taste and evaluate a range of fruits, yoghurts, juices, milk and milk alternatives* (to determine the intended user's preferences) 6.To evaluate my using my design criteria • Explain what is good about their product based on design criteria. • Suggest how their products could be improved.	Some foods are healthy, and some are unhealthy. Fruit yoghurt and milk (or milk alternatives) are healthy. Understand where fruits, milk (or milk alternatives) and yoghurt fit into the balanced plate. Fruits are grown as plants. Yoghurt is made from milk. Yoghurts and milk can also be plant based. To know that fruit grows on a tree or plant that contains seeds and can be eaten as food, blended with juice, milk or yoghurt to create a smoothie. To know that fruit smoothies are a healthier choice than biscuits and cakes because they are high in vitamins. https://www.foodafactoflife.org.uk/7-11-years/where-food-comes-from-7-11-years/where-food-comes-from-videos-7-11-years	Banana muffins *https://cookieandkate.com/healthy-banana-muffins-recipe/* Practise key skills: Grating, cutting, mixing, weighing, mashing, spooning **Food safety**: Where do you store food to keep it safe? Cupboard, fridge, freezer **Consumer awareness:** All food comes from Plants and animals. Which food come from farm, sea?
	Tier 2 fruit, smoothie *Tier 3 Design criteria*	*Tier 2 peel, cut, slice, squeeze, grate, chop, colour, texture, taste* *Tier 3 equipment, utensils, bridge hold, claw grip, hygiene, blender*	*Tier 2 product purpose* *Tier 3 evaluation, user, preference, evaluate*	Tier 2 healthy food, unhealthy, cut, chop, plants, trees, balanced diet, juice, milk, yoghurt, smoothie, fat, sugar, vitamins *Tier 3 bridge hold, hygiene, blender*	Tier 2: Healthy, Tier 3: Barcode, nutrition, best before date
	Food Hero: Joe Wicks				
	KS2 Food				

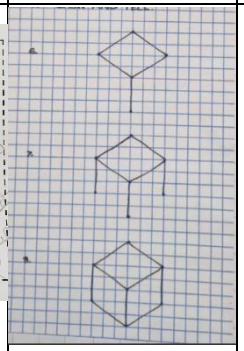
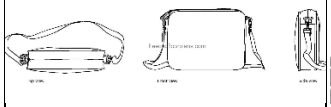
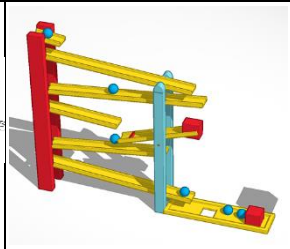
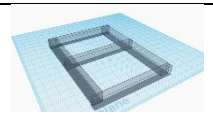
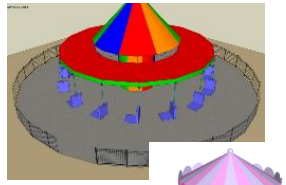
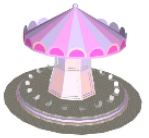
	Designing	Making	Evaluating	Technical Knowledge	Cooking and Nutrition
	Understanding contexts, users and purposes *use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups* *generate, 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 [for example, cutting, shaping, joining and finishing], accurately* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*Some foods are healthy and some are unhealthy.* *Where foods come from.* *Knives and kitchen equipment should be used accurately and safely.* *Hands and equipment need to be clean so that it is hygienic.* *Where in the world? To know where different fruits come from (UK / somewhere else in the world)* *Key Vocabulary*	*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.*
Year 3	*Problem: I want a healthy lunch I can eat on a school trip* *2. To generate ideas using knowledge of investigating a variety of spreads, and savoury fillings.* • Choose some key words for design criteria to guide their thinking. 3. To communicate these ideas through exploded diagrams with annotations.	4. *To know how to cut, slice, grate and chop safely* *4.To know which utensils and equipment to use to cut, slice, grate and chop safely.* • Plan by describing what to do next verbally or written. • Select tools appropriate to the task. Select materials and components suitable for the task according to their characteristics.	1.*To taste and evaluate a range of breads (to determine the intended user's preferences)* *6.To evaluate final product using design criteria.* • Use their own design criteria to say what is good about their product and what needs improving.	Some foods are healthy, and some are unhealthy. Bread is healthy as part of a balanced diet. Understand where bread (carbohydrate), spreads (dairy, fats) and sandwich fillers (protein, fats, vitamins and minerals) fit into the balanced plate. Bread is produced from plants. Knives must be used safely when slicing using the claw hold. A sandwich consists of two or more slices of bread or a split roll with a filling in between. They can also be open, wraps, stacked, pinwheel or grilled. Where does bread come from? The journey of bread… https://www.bbc.co.uk/bitesize/topics/zjr8mp3/articles/zhc7kty	Seasonality focus Practise key skills: Peeling, grating, chopping, measuring **Consumer awareness**: What parts of the plants do you eat? Where are potatoes grown and how?
	Tier 2 bread, spread, filler, savoury, healthy, ingredients *Tier 3*	*Tier 2 cut, slice, grate, chop, spread* *Tier 3 functionality*	*Tier 2 evaluate, taste, texture, appearance* *Tier 3, cost*	*Tier 2 carbohydrate, dairy, fats, proteins, vitamins, minerals* *Tier 3 wheat, combine harvester, pasteurise, vat*	Tier 2: Name of vegetables, stalk, root, seed, fruit, leaves Tier 3: Vegetarian, vegan, pescatarian
	Food hero: Jamie Oliver				
Year 4					Handmade dough pizzas *https://www.jamieoliver.com/recipes/bread-recipes/pizza-dough/* Practise key skills: kneading, weighing, cutting, chopping, spreading, sprinkling **Food safety**: Spoilage of fruit and vegetables. Why some food is kept in the fridge? **Consumer awareness**: How is cheese made? Where are tomatoes grown? **Food choice**: Cost of homemade pizza compared to bought
					Tier 2: Homemade, *Tier 3: Spoilage, curdling milk, brine*
Year 5	***Problem: I would like a savoury snack I can eat when I'm in a hurry*** *2. To be able to generate ideas focus on the needs of the target market and research.* • Write a simple design specification and refer to it when designing. *3. To use exploded diagrams (recipe concept) to develop and communicate their ideas.*	4.To know how to prepare ingredients for empanadas 4. To know how to use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Plan by explaining what to do next by ordering the main step, including processes that involve a series of steps verbally or written. • Identify tools needed for different stages. Select and explain their choice of materials and components according to functional properties. *5. To use skills I have learnt to make my empanadas*	*1. To taste and evaluate a range of hot savoury fillings to determine the intended user's preferences.* 6. To evaluate their ideas and products against their original design criteria.	Some foods are healthy, and some are unhealthy. Vegetables are healthy. Understand where vegetables and meat fit into the balanced plate. Pastry is made from wheat and so comes from plants. Knives must be used safely using the bridge hold and claw hold. Hands and equipment need to be clean and hair needs to be tied back so that it is hygienic. An empanada is a type of baked or fried turnover consisting of pastry and filling (usually savoury). **Where does meat come from?** To understand how meat is reared, caught and processed. *https://www.foodafactoflife.org.uk/7-11-years/where-food-comes-from-7-11-years/where-food-comes-from-videos-7-11-years*	focus on seasonality Practise key skills: Grating, cutting, chopping, peeling, boiling, mashing, spreading **Food safety**: Packaging and food hygiene Food poisoning and how it occurs, what do shops do to prevent this **Consumer awareness**: Palm oil and deforestation (Geog.)

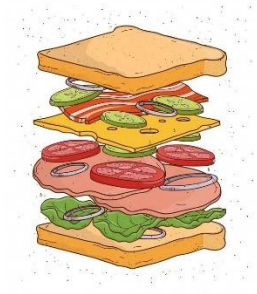
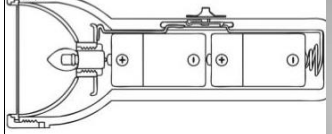
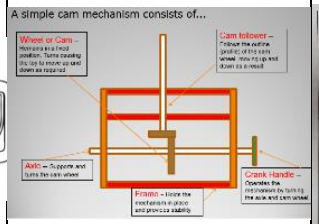
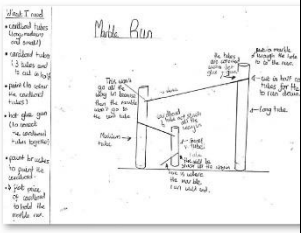
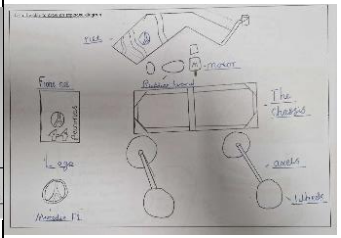
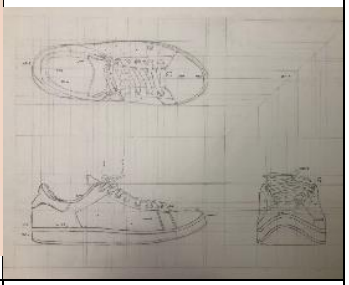
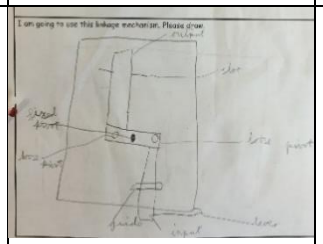
	Tier 2 pastry, kneading *Tier 3 empanada*	*Tier 2 frying, baking* *Tier 3 savoury*	*Tier 2 evaluate, purpose* *Tier 3 marketing, cost*	*Tier 2 vegetables, meat* *Tier 3 reared, processing, slaughter*	*Tier 2: Food poisoning, deforestation,* *Tier 3: Fibre, Palm oil*
	Food hero: Thomasina Miers				
Year 6					A Mexican Meal: Tortilla, peppers, chilli, onions salsa and guacamole Revisit all previous skills **Consumer awareness:** discuss allergies and intolerances **Food choice**: Importance of eating as a group social and family **Food labelling:** Look for food origins on labels, Compare main nutrients on a variety of labels, Production labels- organic/ soil association/ RSPCA/ red tractor
					Tier 2: Mexican foods, *Tier 3: food miles, cross contamination, bacteria*

	Computer Control				
	Designing		**Making**	**Evaluating**	**Technical Knowledge**
	Understanding contexts, users and purposes	*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 [for example, cutting, shaping, joining and finishing], accurately* *select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products* *evaluate their ideas and products against their own design criteria and consider the views of others to improve their work* *understand how key events and individuals in design and technology have helped shape the world*	*apply their understanding of how to strengthen, stiffen and reinforce more complex structures* *understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]* *understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]* *apply their understanding of computing to program, monitor and control their products.*

Year 4	*Problem: I don't know whether I'm brushing my teeth for the right amount of time* 1. To know 2 of the benefits of using computer control • Computers do not need breaks • Computers can repeat actions in the same way forever • Can work in places dangerous for humans 2. To know Micro:bit is a simplified computer that is designed to run a single basic program repeatedly 3. To be able to predict what sections of code will do 4. To be able to investigate, analyse and evaluate different types of timer 5. To be able to generate design criteria based on the user 6. To be able to use annotated sketches and prototypes to develop, model and communicate ideas.	7. To be able to select from and use tools and equipment to cut, shape, join and finish 8. To be able to plan an algorithm for a toothbrush timer 9. To be able to select code blocks to form an algorithm	10. To be able to test, debug and improve my code 11. To be able to evaluate the final product against the design criteria	
	Tier 2 user, design, purpose *Tier 3 control, microcontroller, input, output,*	*Tier 2: structure, durable* *Tier 3: block code*	*Tier 2 evaluate, test, improve* *Tier 3: debug*	*Tier 2* *Tier 3*
	Innovator: Grace Hopper Marie Van Brittan Brown			
Year 6	*Problem: A theme park needs a prototype for a new amusement ride that changes throughout the experience* *1.To be able to control a simple circuit connected to a computer.* To know what a Crumble is and how it works 2 To be able write a program which includes count-controlled loops. 3. To be able to explain that a loop can stop when a condition is met. 4. To be able to explain that a loop can be used repeatedly check whether a condition has been met. 5. To be able to investigate, analyse and evaluate existing amusement rides. 6. To know pioneers in amusement ride engineering. 7. To be able to generate ideas by carrying out survey, interview or questionnaire with client 8. To be able to design a physical project that includes selection	9. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams, including the microcontroller, interface box or standalone box to be used. 9. To be able to use a 3D computer aided design tool to communicate ideas. 10. To use skills I have learnt to produce detailed list of tools, equipment and materials and formulate step by step plans. 11. To use all the skills I have learned to make my amusement ride. 12. To be able to create a program that controls my amusement ride.	13. To compare the final product to the original design specification and identify improvements. 14. To be able to test the system to demonstrate its effectiveness for the intended user and purpose.	A count-controlled loop is a form of repetition in which a set of commands are carried out a **specific number of times**. A condition-controlled loop is a form of repetition in which a set of commands stop being carried out when a condition is met.
	Tier 2 Program, input devices, output devices, condition, selection *Tier 3 Microcontroller, sparkle, infinite loop*	*Tier 2 flat rid, swing carousel, connection* *Tier 3 components*	*Tier 2 block code* *Tier 3*	*Tier 2 repetition, command* *Tier 3*
	Innovator: Ada Lovelace and John Wardley			

Communicating Ideas and Drawing Progression

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To be able to draw pictures before starting to build and create e.g. pictures of railway tracks, buildings, obstacle courses.	*To use drawings to communicate my ideas* • To communicate these ideas through talk and annotated drawings. Food	*To use own experience of likes and dislikes to design my moving vehicle through drawings and mock-ups* • Introduction to drawing a cuboid on squared paper fire engine - Mechanisms	*To begin to use 3D sketches on squared paper and prototypes with key parts labelled to communicate ideas* Structures	*To use 2D computer-aided design to develop their ideas.* *Be able to use orthographic sketches to communicate ideas of my design.* Money containers - Textiles	*To develop and model ideas through discussion, prototypes and annotated sketches* • *Use computer-aided design to develop and communicate their ideas* Marble Run – Structures (alongside computing)	To be able to use a 3D computer aided design tool to communicate ideas. Car chassis - Mechanisms Theme Park- computer control • *Use computer-aided design to develop and communicate their ideas.*
 						  

	2)To be able to share their work with their friends and discuss their process or intention.	*Use some sketching and annotating and ICT (where appropriate) to communicate ideas.* Structures.	*To communicate these ideas through talk and introduce an exploded diagram* Introduction of exploded diagram for smoothie - Food	To communicate these ideas through cross sectional/exploded diagrams with annotations. Food	*To be able to use cross-sectional drawing to communicate ideas.* Electrical systems	*To use cross-sectional drawings to develop and communicate their ideas.* Cam Toys – Mechanisms *To use orthographic drawings to develop and communicate their ideas* Marble run - Structures	*Use annotated exploded diagrams to develop and communicate their ideas.* Cars – Mechanisms
						 	
		Use some sketching and annotate (where appropriate) when communicating ideas. moving picture book Mechanisms	*Be able to use orthographic sketches to communicate ideas of my design.* Introduction to orthopgraphic (front and back) drawing (Puppets) - Textiles	*To use orthographic (view of front and of mechanism) sketches to communicate ideas.* Mechanisms 	To be able to use annotated sketches and prototypes to develop, model and communicate ideas. Computer control	*To use exploded diagrams (recipe concept) to develop and communicate their ideas.* (empanadas) - Food 	*Use annotated orthographic drawings to develop and communicate their ideas and justify in a convincing way.* Orthographic drawing (Slippers) - textiles 
							Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams, including the microcontroller, interface box or standalone box to be used. Computer control – theme park ride
