DT - Reception - **Expressive Arts & Design**

For full EYFS progression map EYFS progression at MBS

ELGs:
- **Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function**
- **Share their creations, explaining the process they have used**
- **Make use of props and materials when role-playing characters in narratives and stories**

Focus	Dveloping	Making	Evaluating	Technical skills	Food technology
Prior knowledge (Nursery)	• Develop own ideas & decide which materials to use to express them	• Use various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces • Use available resources to create props or creates imaginary ones to support play	• Notice what other children & adults do, mirroring what is observed, adding variations & then doing it spontaneously	• Develop new skills & techniques • Use tools for a purpose	• Talk about the differences between materials & changes they notice • Make healthy choices
Current Knowledge- Reception	• Develop own ideas through experimentation with diverse materials to express & communicate their discoveries & understanding • Create collaboratively sharing ideas, resources & skills	• Use increasing knowledge & understanding of tools & materials to explore their interests & enquiries & develop their thinking • Create representations both imaginary & real-life ideas, events, people & objects	• Express & communicates working theories, feelings & understandings • Responds imaginatively to art works & objects • Return to & build on previous learning, refining ideas & developing their ability to represent them • Discuss problems & how they might be solved	• Use different techniques for joining materials • Use tools independently, with care & precision	• Look closely at similarities, differences, patterns & change • Know & talk about the different factors that support their overall health & well-being

Structures- Year 1- Freestanding structures

Prior knowledge

• 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.

New knowledge: freestanding structures [1_2 Freestanding structures.pdf]
Example projects: enclosures for farm or zoo animals, playground/park/garden furniture, bridge for Billy Goats Gruff playground equipment, furniture for the Three Bears

NC objectives:

Technical knowledge and understanding:
Know how to make freestanding structures stronger, stiffer and more stable.
• Know and use technical vocabulary relevant to the project.

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.

	Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
	Go on a walk and/or	Demonstrate measuring, marking out,	Discuss with the children what structure they will be designing,	Chn make their structure according to their	Ask children to evaluate their developing ideas

Future knowledge

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.

Mechanisms- Year 1- Lever and Sliders

Prior knowledge

• 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.

New knowledge: levers and sliders 1_ 2 Sliders and levers.pdf

Example projects: class/group storybook, poster, greetings card, class/group information book, storyboard

NC objectives:

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.

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

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Explore and evaluate a collection of books	Demonstrate simple levers and sliders to the children using prepared teaching	Discuss with the children what they will be designing, making and evaluating e.g. *Who will your product be for? What will be its*	Discuss the finishing techniques the children might use e.g. using digital text and graphics, paint,	Ask children to evaluate their developing ideas and final products against the original design

Future knowledge

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

Food- Year 1- Preparing fruit and vegetables

Prior knowledge

Experience of common vegetables, undertaking sensory activities i.e. appearance taste and smell.

• Experience of cutting soft fruit and vegetables using appropriate utensils.

New knowledge: Preparing fruit and vegetables 1_2 Preparing fruit and vegetables.pdf

Example projects: Y1 fruit salads, fruit yogurt, fruit drinks, fruit jelly, fruit smoothies, NC objectives:

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

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. *What is this called? Who has eaten this fruit/vegetable*	Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk Demonstrate how to use simple utensils	Discuss possible products that they might want to design, make and evaluate and who the products will be for. Agree on design criteria that can be used to guide the	Chn prepare and make a healthy snack such Y1: focus on fruit eg..fruit smoothie/fruit salad/fruit kebab	Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.

Future knowledge

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.

Mechanisms- Year 2- Wheels and axles

Prior knowledge
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.

New knowledge: Wheels and axles 1_2 Wheels and axles.pdf
Example projects: push/pull toys e.g. emergency service vehicle, carnival float, farm vehicle, clown's car, vehicle for imaginary/story character, shopping trolley

NC objectives:

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.

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**	
Explore and evaluate a range of	Using construction kits with wheels and axles, ask children to make a product that	Discuss with the children what they will be designing, making and evaluating within an authentic	Make their wheel and axle product using their design ideas and criteria as an ongoing guide	Ask children to evaluate their finished product, communicating how it works and how it	

Future knowledge

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

Food- Year 2- Preparing fruit and vegetables

Prior knowledge

Experience of common vegetables, undertaking sensory activities i.e. appearance taste and smell.

• Experience of cutting soft fruit and vegetables using appropriate utensils.

New knowledge: Preparing fruit and vegetables 1_2 Preparing fruit and vegetables.pdf

Example projects: Y2: vegetable salads, fruit and vegetable kebabs, vegetable and fruit smoothie

NC objectives:

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

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. *What is this called? Who has eaten this*	Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk Demonstrate how to use simple utensils and	Discuss possible products that they might want to design, make and evaluate and who the products will be for. Agree on design criteria that can be used to guide the	Chn prepare and make a healthy snack such Y2: focus on vegetables e.g. salad, vegetable kebab, or combining	Evaluate as the children work through the project and the final products against the intended purpose and with the intended user, drawing on the

Future knowledge

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.

Textiles- Year 2- Templates and joining techniques

Prior knowledge

Explored and used different fabrics.

Cut and joined fabrics with simple techniques.

Thought about the user and purpose of products.

New knowledge: templates and joining techniques 1_2 Templates and joining.pdf

Example projects: glove puppet, finger puppet, simple bag, clothes for teddy/soft toy/class doll, fabric placemat

NC objectives:

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.

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.

Investigative and	Focused Tasks	Design	Make	Evaluate

Future knowledge

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.

Mechanisms- Year 3- levers and linkages

Prior knowledge

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

New knowledge: levers and linkages

3_4 Levers and linkages.pdf

Example projects: story book, greetings card, information book, storyboard

NC objectives:

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.

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Children investigate, analyse and evaluate books and, where available, other	• Demonstrate a range of lever and linkage mechanisms to the children using prepared teaching aids. • Use questions to develop children's	Develop a design brief with the children. Ask the children to generate a range of ideas, encouraging	Chn plan and make storybook or greetings card with lever mechanism.	Evaluate the final products against the intended purpose and with the intended user, drawing on the

Future knowledge

Understand and use pneumatic mechanisms.
• Know and use technical vocabulary relevant to the project.
Order the main stages of making.
• Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.
• Select from and use finishing techniques suitable for the product they are creating.

Textiles- Year 3- 2D shape to 3D product

Prior knowledge

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.

New knowledge: 2D shape to 3D product 3_4 2D shape to 3D product.pdf
Example projects: purse/wallet, soft toy/mascot, apron, fashion accessory, beach bag, shoe bag, pencil case, story sack

NC objectives:

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.

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Children	Demonstrate a range of stitching	Children to create a design brief	Children to assemble their	Evaluate as the process is

Future knowledge

• 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.

Structures- Year 3- Shell structures

Prior knowledge

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.

New knowledge: shell structures 3_4 Shell structures.pdf
Example projects: gift boxes/containers, desk tidy, disposable/recyclable lunch boxes, packaging, cool boxes, party boxes, keep safe boxes, mystery boxes
NC objectives:
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.

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**	
	Children use kit	Develop a design brief with the	Chn make their	Evaluate	

Future knowledge

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

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.

Electrical Systems - year 4 - simple units and circuits

Prior knowledge

Year 4 science:
Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

KS1 and LKS2 DT:
Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials

New knowledge: Simple circuits and switches project on a page 3_4
Simple circuits and switches.pdf
Example projects: siren for a toy vehicle, reading light, noise-making toy, nightlight, buzzer for school office
NC objectives:

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.
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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Discuss, investigate and potentially disassemble	Distinguish between input devices e.g. switches and output devices e.g. bulbs and buzzers Demonstrate how to find a fault in	Develop design brief with children. Discuss purpose	Chn make their product,	Evaluate throughout and the final

Future Knowledge
.Understand and use electrical systems in their products.
• Understand the use of computer control systems in products.
• Apply their understanding of computing to program, monitor and control their products.

Create
and modify a computer control program to enable the product to work automatically in response to changes in the environment.

Food - year 4 - Healthy and varied diet

Prior knowledge

Y1/2:
• 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.

New knowledge: healthy and varied diet 3_4 Healthy and varied diet.pdf

Example projects: Year A: sandwich/wrap/pitta/toasties
Year B: dips and salad snacks, fruit cocktails

NC objectives:

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.

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.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**
Investigate a range of	Learn to select and use a range of utensils and use a range of	• Discuss the purpose of the products that the	Ask children to	Evaluate as the assignment

Future knowledge
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.

Mechanisms- Year 4- pneumatics

Prior knowledge

Explored simple mechanisms, such as sliders and levers, and simple structures.
• Learnt how materials can be joined to allow movement.
• Joined and combined materials using simple tools and techniques.

New knowledge: pneumatics 3_4 Pneumatics.pdf

Example projects: tipper truck, jack-in-the-box, class display, moving creature, shop window display, moving toy

NC objectives:

Technical knowledge and understanding:
Understand and use pneumatic mechanisms.
• Know and use technical vocabulary relevant to the project.

Designing
Generate realistic and appropriate 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 and join materials and components such as tubing, syringes and balloons.
• Select from and use finishing techniques suitable for the product they are creating.

Evaluating
• Investigate and analyse books, videos and products with pneumatic mechanisms.
• Evaluate their own products and ideas against criteria and user needs, as they design and make.

Investigative and Evaluative Activities (IEAs)	Focused Tasks	Design	Make	Evaluate
Children investigate, analyse and evaluate familiar objects that use air to make them work e.g. bicycle pump, balloon, inflatable swimming aids, foot pump for inflating an air bed. Construct a simple pneumatic	Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles. Introduce ways in which pneumatic systems can be used to operate levers. • Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills	Develop a design brief with the children. Discuss with children the purpose of the products they will be designing and	Chn make their chosen product with pneumatic mechanis	Evaluate the final products against the intended

New knowledge: cams

5_6 Cams.pdf

Example projects: a shop display with moving parts e.g. lifting or rotating images of items for sale, a vehicle incorporating cam-driven components, a toy with oscillating, rotating or reciprocating movement

NC objectives:

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.

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

Year 5 - Electrical Systems - Simple Programming

Prior knowledge

Year 4 science: Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.

KS1 and LKS2 DT: Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials.

Create product with simple circuits and electrical components Year 4 DT)

New knowledge: Simple programming project on a page 3_4 Simple programming and control.pdf

Example projects: illuminated sign that flashes on or off, display lighting, burglar alarm

NC objectives:

Technical knowledge and understanding:

• Understand and use computing to program and control products containing electrical systems, such as series circuits incorporating switches, bulbs and buzzers.

• Know and use technical vocabulary relevant to the project.

Designing

• Gather information about users' needs and wants, and develop design criteria to inform the design of products that are fit for purpose.

• 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.

• Connect simple electrical components and a battery in a series circuit to achieve a functional outcome.

• Program a standalone control box, microcontroller or interface box to enhance the way the product works.

Evaluating

Investigate and analyse a range of existing battery-powered products, including pre-programmed and programmable products.

• Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

Investigative and Evaluative Activities (IEAs)	**Focused Tasks**	**Design**	**Make**	**Evaluate**	
	Recap with the children how to	Develop a design brief with the children within a context	Have the children write, test and debug	Evaluate throughout and the final	

Future knowledge

Understand and use electrical systems in their products.

• Understand the use of computer control systems in products.

• Apply their understanding of computing to program, monitor and control their products.

Create and modify a computer control program to enable the product to work automatically in response to changes in the environment.

Year 5 - Textiles - Combining different fabric shapes

Prior knowledge

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

New knowledge: combining different fabric shapes 5_6 Combining different fabric shapes.pdf
Example projects: tablet case, mobile phone carrier, shopping bag, insulating bag, hat/cap, garden tool belt, slippers, sandals, fabric advent calendar, fabric door stop

NC objectives:

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.

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.

Investigative and Evaluative Activities (IEAs) Children investigate, analyse and evaluate a range of existing products.	**Focused Tasks** Develop skills of threading.	**Design** Set an authentic and meaningful	**Make** Apply understanding and skills from	**Evaluate** Evaluate both as the children proceed with	**Future knowledge**	

Mechanisms- Year 5- Cams

Prior knowledge

• 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.

New knowledge: cams 5_6 Cams.pdf

Example projects: a shop display with moving parts e.g. lifting or rotating images of items for sale, a vehicle incorporating cam-driven components, a toy with oscillating, rotating or reciprocating movement

NC objectives:

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.

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 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.

Future knowledge

Understand that mechanical and electrical systems have an input, process and an output.
• Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.
• Know and use technical vocabulary relevant to the project.

Mechanisms- Year 6- pulleys and gears

Prior knowledge

Experience of axles, axle holders and wheels that are fixed or free moving.

• Basic understanding of electrical circuits, simple switches and components.

• 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.

New knowledge: pulleys and gears 5_6 Pulleys or gears.pdf

Example projects: fairground ride with gears or pulleys e.g. carousel, Ferris wheel, controllable toy vehicle with gears or pulleys e.g. dragster, off-road vehicle, sports car, lorry, window display with moving parts e.g. lifting or turning items for sale

NC objectives:

Technical knowledge and understanding:

• Understand that mechanical and electrical systems have an input, process and an output.
• Understand how gears and pulleys can be used to speed up, slow down or change the direction of movement.
• Know and use technical vocabulary relevant to the project.

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 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 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.
• Investigate famous manufacturing and engineering companies relevant to the project.

Future knowledge

understand how more advanced mechanical systems used in their products enable changes in movement and force

understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]

Food- Year 6- Celebrating culture and seasonality

Prior knowledge

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.

New knowledge: Celebrating culture and seasonality 5_6 Celebrating culture and seasonality.pdf

Example projects: bread, pizza, savoury biscuits, savoury scones, savoury muffin, soup

NC objectives:

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.

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.

Future knowledge

understand and apply the principles of nutrition and health cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] understand the source, seasonality and characteristics of a broad range of ingredients

Textiles- Year 6- Combining different fabric shapes

Prior knowledge

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

New knowledge: combining different fabric shapes 5_6 Combining different fabric shapes.pdf
Example projects: tablet case, mobile phone carrier, shopping bag, insulating bag, hat/cap, garden tool belt, slippers, sandals, fabric advent calendar, fabric door stop

NC objectives:

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.

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.

Future knowledge

understand and use the properties of materials and the performance of structural elements to achieve functioning solutions

use research and exploration, such as the study of different cultures, to identify and understand user needs

select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture