



Design and Technology Long Term Plan

D&T

"Design is not just what it looks like and feels like. Design is how it works." Steve Jobs, co-founder of Apple, Inc.

Intent:

At Lilycroft Primary we intend to build a Design Technology curriculum which is inspiring, rigorous, and practical. We want our children to use creativity and imagination, to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. We intend for all children to acquire appropriate subject knowledge, skills and understanding as set out in the National Curriculum. At the centre of the subject is creativity and imagination. Design & Technology is a subject which draws, develops and implements a range of different disciplines including mathematics, science, engineering, computing, and art. The subject embeds high quality literacy skills through analysis and evaluation techniques. We want Design and Technology to prepare our children, to give them the opportunities, responsibilities, and experiences they need to be successful in later life. Design and technology gives young people the skills and abilities to engage positively with the designed and made world. They learn how products and systems are designed and manufactured, how to be innovative and to make creative use of a variety of resources including traditional and digital technologies, to improve the world around them.

Implementation:

Design and Technology is a crucial part of school life and learning and it is for this reason that as a school we are dedicated to the teaching and delivery of a high-quality Design and Technology curriculum. This is implemented through:

- A well thought out, whole school, yearly overview of the DT curriculum which allows for progression across year groups in all areas of DT (textiles, mechanisms, structures, food and electrical systems)
- Well planned and resourced projects providing children with a hands-on and enriching experience
- A range of skills being taught ensuring that children are aware of health and safety issues related to the tasks undertaken
- Teachers being given ownership and flexibility to plan for Design and Technology; often teaching DT as a block of lessons to allow the time needed for the children to be critical, inventive and reflective on their work.
- Each project from Year 1 to Year 6 addressing the principles of designing, making, and evaluating and incorporating relevant technical knowledge and understanding in relevant contexts.
- Pupils being introduced to specific designers, chefs, nutritionists, etc. helping to engender an appreciation of human creativity and achievement and increase the cultural capital from which they can draw in the future.

As a school, we promote Design and Technology in the wider school through creative after school club and a weekly gardening session. Where the children learn about where our food comes from by growing their own, and the importance of a balanced, healthy and varied diet and how to prepare this.

Impact:

Children will have clear enjoyment and confidence in Design and Technology that they will then apply to other areas of the curriculum. Through carefully planned and implemented learning activities the pupils develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. They gain a firm foundation of knowledge and skills to see them equipped to take on further learning in High School. Pupil's skills and knowledge are assessed ongoingly by the class teacher, throughout lessons and a summative assessment is completed termly.

British Values covered **Rule of law** **democracy** **individual liberty** **mutual respect** **tolerance of those of different faiths and beliefs**



Year Group	Autumn Two Block 1	Spring Two Block 2	Summer Two Block 3
REC	Structures Explore junk modelling, tinkering with temporary and permanent joins, and a range of materials. Create basic models to test in different conditions <u>EYFS Outcomes</u> Physical development Develop small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery Expressive Arts and Design Explore, use and refine a variety of artistic effects to express ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ELG: Creating with materials: Share their creations, explaining the process they have used. <u>Characteristics of effective learning</u> Playing and exploring	Textiles Explore and develop threading and weaving skills with different materials and objects. <u>EYFS Outcomes</u> Physical development Develop small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Fine Motor Skills: Use a range of small tools, including scissors, paint brushes and cutlery. Expressive Arts and Design Explore, use and refine a variety of artistic effects to express ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. ELG: Creating with materials: Share their creations, explaining the process they have used. <u>Characteristics of effective learning</u> _Playing and exploring	Cooking and Nutrition Explore and become familiar with different fruits and vegetables, using their senses. <u>EYFS Outcomes</u> Communication and language Learn new vocabulary. Use new vocabulary throughout the day. ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. Personal, social and emotional development Know and talk about the different factors that support their overall health and wellbeing: healthy eating. ELG: Managing self: Manage their own basic hygiene and personal needs, including understanding the importance of healthy food choices. Physical development Develop small motor skills so that they can use a range of tools competently, safely and confidently. ELG: Use a range of small tools, including scissors, paint brushes and cutlery. Understanding the world Explore the natural world around them. ELG: The Natural World: Explore the natural world around them, making observations and drawing



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Active learning
Creating and thinking critically

Active learning
Creating and thinking critically

pictures of animals and plants. Expressive Arts and Design -Explore, use and refine a variety of artistic effects to express ideas and feelings.
ELG: Creating with materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Characteristics of effective learning

_Playing and exploring
Active learning

Seasonal Projects

Learning Focus: Mechanisms-To create a picture with a simple sliding mechanism.

Christmas: Sliding Santa chimneys

Children explore a simple paper slider mechanism as part of a practical example and then apply it to create their own sliding Santa chimney picture.

EYFS Outcomes

Expressive arts and design

Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them.

ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

ELG: Creating with Materials: Share their creations, explaining the process they have used.

Learning Focus: To design and create a hanging Easter egg decoration.

Easter: Hanging egg decoration

After listening to the Easter story, and learning about the history of Easter eggs, pupils design and make their own Easter egg hanging decorations.

EYFS Outcomes

Physical development

Develop their small motor skills so that they can use a range of tools competently, safely and confidently.

Expressive arts and design

Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning,

Learning Focus: To create a rainbow salad and talk about the importance of healthy eating.

Summer: Making a rainbow salad

After revisiting the health and safety rules, pupils prepare the ingredients to create their rainbow salad. They taste and evaluate their rainbow salad

EYFS Outcomes

Communication and language

Learn new vocabulary.

Use new vocabulary throughout the day.

ELG: Speaking: Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.



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ELG: Creating with Materials: Make use of props and materials when role playing characters in narratives and stories.

Characteristics of effective learning

Playing and exploring

Creating and thinking critically

Key Vocabulary

sliding mechanism
sliding picture
Christmas
Santa
Father Christmas
chimney
collage
wide
long
width
length
permanent join
temporary join

refining ideas and developing their ability to represent them.

ELG: Creating with Materials: Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

ELG: Creating with Materials: Share their creations, explaining the process they have used.

Characteristics of effective learning

Active learning

Creating and thinking critically

Key Vocabulary

design
plan
create
Easter
egg
chocolate
Jesus
Christian
Bible
pattern
colour
shape

Personal, social and emotional development

Know and talk about the different factors that support their overall health and wellbeing: healthy eating.

ELG: Managing self: Manage their own basic hygiene and personal needs, including...understanding the importance of healthy food choices

Characteristics of effective learning

Playing and exploring

Active learning

Key Vocabulary

healthy
balanced diet
healthy eating
healthy lifestyle
mind
body
brain
chopping board
knife
fruit and vegetable names
adjectives such as: sweet, sour, soft, crunchy, delicious, yummy, tasty.



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Year 1	<u>Learning Focus:</u> Structures To design, made and evaluate an enclosure for an animal for children to play with <u>Link</u> Science-Animals including Humans <u>Prior learning</u> • 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. <u>Key Learning</u> <u>National Curriculum:</u> 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 suitable for the task, 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	<u>Learning Focus:</u> Textiles To design, make and evaluate a puppet for younger children for imaginary role-play. <u>Link</u> History-History of Toy and Games <u>Prior learning</u> • Explored and used different fabrics. • Cut and joined fabrics with simple techniques. <u>Key Learning</u> <u>National Curriculum:</u> Designing • Design a functional and appealing product for a chosen user and purpose based on simple design criteria. • Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology. Making • Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing. • Select from and use textiles according to their characteristics. Evaluating • Explore and evaluate a range of existing textile products relevant to the project being undertaken. • Evaluate their ideas throughout and their final products against original design criteria. Technical knowledge and understanding	<u>Learning Focus:</u> Cooking and Nutrition To design, make and evaluate a fruit kebab for myself for a picnic. <u>Link</u> Science-Plants <u>Prior learning</u> • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils. <u>Key Learning</u> <u>National Curriculum</u> Designing • Design appealing products for a particular user based on simple design criteria. • Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. • Communicate these ideas through talk and drawings. Making • Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. • Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluating • Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. • Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding



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	original design criteria. Technical knowledge and understanding • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary Key Vocabulary cut, fold, join, fix structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved metal, wood, plastic circle, triangle, square, rectangle, cuboid, cube, cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function PD Opportunities	• 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. Key Vocabulary names of existing products, joining and finishing techniques, tools, fabrics and components template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function PD Opportunities	• 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 eat well plate. • Know and use technical and sensory vocabulary relevant to the project. Key Vocabulary fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria PD Opportunities Picnic at Lister park
Year 2	Learning Focus: Mechanisms To design, make and evaluate a push/pull toy for themselves to play with. Link Prior learning • Early experiences of working with paper and card to make simple flaps and hinges. • Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. Key Learning	Learning Focus: Cooking and Nutrition To design, make and evaluate a fruit salad for children for a school dinner dessert. Link Prior learning • Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. • Experience of cutting soft fruit and vegetables using appropriate utensils. Key Learning National Curriculum	Learning Focus: Structures To design, make and evaluate a strong chair for Baby Bear. Link Prior learning • 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. Key Learning National Curriculum: Designing



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National Curriculum:

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 suitable for the task, explaining their choices, to cut, shape and join paper and card.
- Use simple finishing techniques suitable for the product they are creating.

Evaluating

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

Technical knowledge and understanding

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

Key Vocabulary

slider, lever, pivot, slot,
bridge/guide
card, masking tape,
paper fastener, join
pull, push, up, down,
straight, curve, forwards,
backwards

Designing

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

Making

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

Evaluating

- Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences.
- Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding
- Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.
- Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eat well plate.
- Know and use technical and sensory vocabulary relevant to the project.

Key Vocabulary

fruit and vegetable names, names of equipment and utensils sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp,

- 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 suitable for the task, explaining their choices.
- Select new and reclaimed materials and construction kits to build their structures.
- Use simple finishing techniques suitable for the structure they are creating.

Evaluating

- Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.
- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. Technical knowledge and understanding
- Know how to make freestanding structures stronger, stiffer and more stable.
- Know and use technical vocabulary

Key Vocabulary

cut, fold, join, fix
structure, wall, tower,
framework, weak, strong,
base, top, underneath,
side, edge, surface,
thinner, thicker, corner,
point, straight, curved
metal, wood, plastic
circle, triangle, square,
rectangle, cuboid, cube,



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	design, make, evaluate, user, purpose, ideas, design criteria, product, function PD Opportunities: A visit to the industrial museum: session – let's explore transport.	sour, hard flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria PD Opportunities	cylinder design, make, evaluate, user, purpose, ideas, design criteria, product, function PD Opportunities
Year 3	Learning Focus: Textiles To design, make and evaluate a cushion for the home. (Manufacturer: Marton Mills) Link Prior learning • Have joined fabric in simple ways by gluing and stitching. • Have used simple patterns and templates for marking out. • Have evaluated a range of textile products. Key Learning National Curriculum: 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.	Learning Focus: Structure including CAD To design, make and evaluate a giftbox for a child for a celebration. (Manufacturers: The Walsall Box Company) Link Prior learning • Experience of using different joining, cutting and finishing techniques with paper and card. • A basic understanding of 2-D and 3-D shapes in mathematics and the physical properties and everyday uses of materials in science. Key Learning National Curriculum: 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. • Use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.	Learning Focus: Cooking and Nutrition To design, make and evaluate a salad for a member of staff for a healthy lunch Chef: Jamie Oliver Link Prior learning • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>. • Have used some equipment and utensils and prepared and combined ingredients to make a product. Key Learning National Curriculum: 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



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Evaluating

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

Technical knowledge and understanding

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

Key Vocabulary

fabric, names of fabrics,
fastening,
compartment, zip,
button, structure,
finishing technique,
strength, weakness,
stiffening, templates,
stitch, seam, seam
allowance
user, purpose,
design, model,
evaluate, prototype, annotated sketch,
functional, innovative, investigate, label, drawing,
aesthetics, function, pattern piece

- Explain their choice of materials according to functional properties and aesthetic qualities.
- Use finishing techniques suitable for the product they are creating.

Evaluating

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

Technical knowledge and understanding

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

Key Vocabulary

shell structure, three-dimensional (3-D) shape,
net, cube, cuboid, prism, vertex, edge, face,
length, width, breadth, capacity marking out,
scoring, shaping, tabs, adhesives, joining,
assemble, accuracy, material, stiff, strong,
reduce, reuse, recycle, corrugating, ribbing,
laminating font, lettering, text, graphics,
decision, evaluating, design brief design criteria,
innovative, prototype

PD Opportunities

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

Evaluating

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

Technical knowledge and understanding

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

Key Vocabulary

name of products, names of equipment, utensils,
techniques and ingredients texture, taste, sweet, sour,
hot, spicy, appearance, smell, preference, greasy,
moist, cook, fresh, savoury hygienic, edible, grown,
reared, caught, frozen, tinned, processed, seasonal,
harvested healthy/varied diet planning, design criteria,
purpose, user, annotated sketch, sensory evaluations

PD Opportunities

Serve dinner that they have made to SLT



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	PD Opportunities		
Year 4	Learning Focus: Cooking and nutrition To design, make and evaluate a healthy sandwich for yourself for your lunchbox. (Chef: Clare Smyth) Link Prior learning • Know some ways to prepare ingredients safely and hygienically. • Have some basic knowledge and understanding about healthy eating and <i>The eatwell plate</i>. • Have used some equipment and utensils and prepared and combined ingredients to make a product. Key Learning National Curriculum: 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	Learning Focus: Electrical systems To design, make and evaluate nightlight for a younger child to help them feel safe and secure (Inventor: Thomas Edison) Link Prior learning • Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. • Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue. Key Learning National Curriculum: 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.	Learning Focus: Mechanical systems To design, make and evaluate a slingshot car to compete in a race (Manufacturer: Bugatti) Link Prior learning • Explored and used mechanisms such as flaps, sliders and levers. • Gained experience of basic cutting, joining and finishing techniques with paper and card. Key Learning National Curriculum: Designing • Generate realistic ideas and their own design criteria through discussion, focusing on the needs of the user. • Use annotated sketches and prototypes to develop, model and communicate ideas. Making • Order the main stages of making. • Select from and use appropriate tools with some accuracy to cut, shape and join paper and card. • Select from and use finishing techniques suitable for the product they are creating. Evaluating • Investigate and analyse books and, where available, other products with lever and linkage mechanisms. • Evaluate their own products and ideas against criteria and user needs, as they design and make. Technical knowledge and understanding • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project



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	appropriate food products, thinking about sensory characteristics. Evaluating • Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. • Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding • Know how to use appropriate equipment and utensils to prepare and combine food. • Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. • Know and use relevant technical and sensory vocabulary appropriately. Key Vocabulary name of products, names of equipment, utensils, techniques and ingredients texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, user, annotated sketch, sensory evaluations PD Opportunities Have a parents afternoon to teach their parents how to make their lunches and have a tasting with the parents.	• Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical knowledge and understanding • Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. • Apply their understanding of computing to program and control their products. • Know and use technical vocabulary relevant to the project. Key Vocabulary series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip control, program, system, input device, output device user, purpose, function, prototype, design criteria, innovative, appealing, design brief PD Opportunities	Key Vocabulary mechanism, lever, linkage, pivot, slot, bridge, guide system, input, process, output linear, rotary, oscillating, reciprocating user, purpose, function prototype, design criteria, innovative, appealing, design brief PD Opportunities
Year 5	Learning Focus: Mechanical systems To design, make and evaluate an automata toy for a younger child to play with. (Inventor: Leonardo Da Vinci) Link Prior learning	Learning Focus: Cooking and Nutrition To design, make and evaluate bread for children for a healthy snack. (Manufacturers: Warburtons) Link Prior learning	Learning Focus: Structures To design, make and evaluate a bridge made for bike users only so they are safe from cars and other vehicles. (Civil Engineer: Isambard Kingdom Brunel) Link Prior learning



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- 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.

Key Learning

National Curriculum:

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.

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

Key Learning

National Curriculum:

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.

- 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

Key Learning

National Curriculum:

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.



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	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. Key Vocabulary cam, snail cam, off-centre cam, peg cam, pear shaped cam follower, axle, shaft, crank, handle, housing, framework rotation, rotary motion, oscillating motion, reciprocating motion annotated sketches, exploded diagrams mechanical system, input movement, process, output movement design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief PD Opportunities Share their toy designs with Year 1 or 2.	• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. • Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding • Know how to use utensils and equipment including heat sources to prepare and cook food. • Understand about seasonality in relation to food products and the source of different food products. • Know and use relevant technical and sensory vocabulary. Key Vocabulary ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, PD Opportunities	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. Key vocabulary pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor circuit, switch, circuit diagram annotated drawings, exploded diagrams mechanical system, electrical system, input, process, output design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief PD Opportunities Visiting Dye house at Bradford college to share their project and have the opportunity to look at other projects. An exhibition to launch the creative work f schools in Bradford.
Year 6	Learning Focus: Electrical systems To design, make and evaluate a steady hand game for the school fair (Inventor: Robert (Bob) Scrimshaw) Link: Science-Electricity Prior learning • Understanding of the essential characteristics of a series circuit and experience of creating a battery powered,	Learning Focus: Textiles To design, make and evaluate a soft toy for child/adult (Inventor: Richard Steiff) Link: Prior learning • Experience of basic stitching, joining textiles and finishing techniques. • Experience of making and using simple pattern	Learning Focus: Cooking and nutrition To design, make and evaluate pizza for children to have for the end of year party. (Chef: Gino D'Acampo) Link: Prior learning • Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.



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functional, electrical product.

- Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.

Key Learning

National Curriculum:

Designing

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

Making

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

Evaluating

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

pieces.

Key Learning

National Curriculum:

Designing

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

Making

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

Evaluating

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

Technical knowledge and understanding

- Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.

Key Learning

National Curriculum:

Designing

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

Making

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

Evaluating

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

Technical knowledge and understanding



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ground-breaking electrical systems and components.

Technical knowledge and understanding

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

Key Vocabulary

series circuit, parallel circuit, names of switches and components, input device, output device, system, monitor, control, program, flowchart function, innovative, design specification, design brief, user, purpose

PD Opportunities

Run a stall at the school fayre

- 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.

Key Vocabulary

seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype

PD Opportunities

- 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.

Key Vocabulary

ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research,

PD Opportunities

End of Year party.