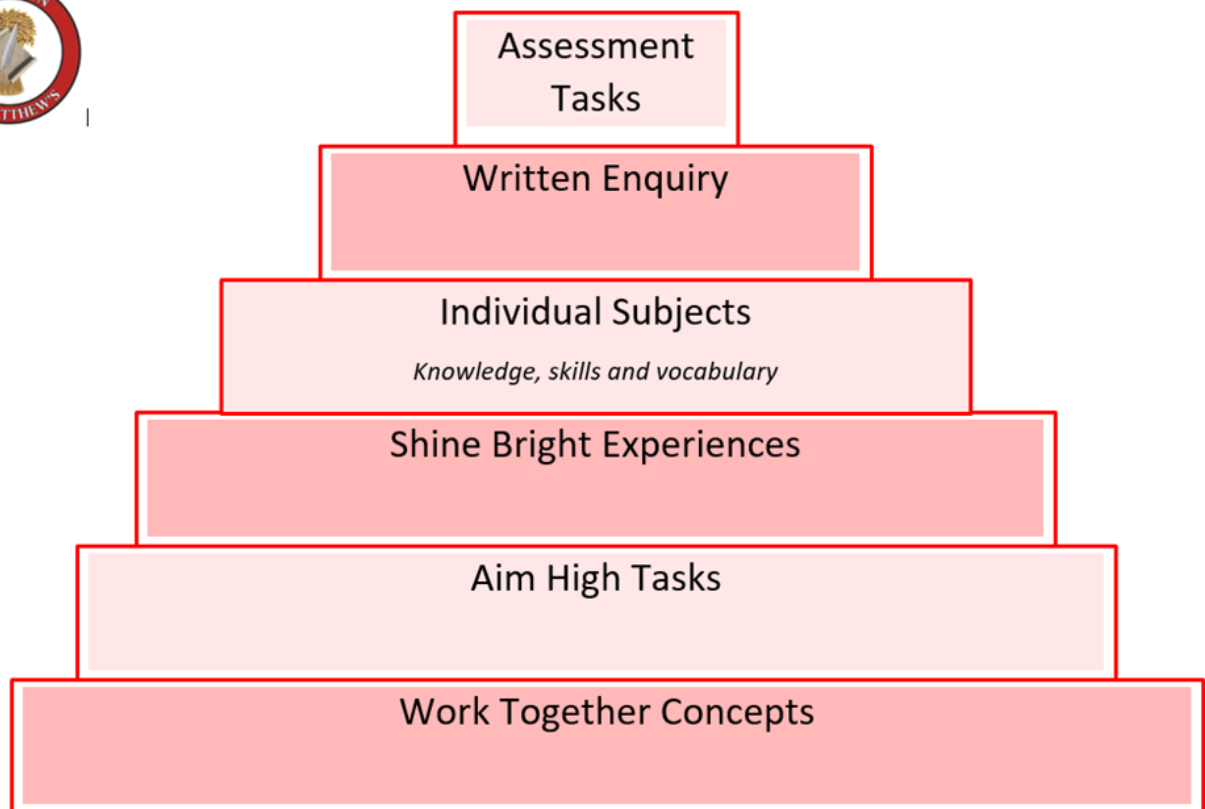


Design Technology Curriculum



**Stretton St Matthew's
C.E. Primary School**

Curriculum Intent

At Stretton St Matthew's, we are very aware of the priority that primary schools attach to children's achievement in English and mathematics. The Cambridge Primary Review indicated that primary schools with a broad, balanced and well-managed curriculum often achieve the highest standards in these subjects at the end of Key Stage 2. The Review attributes this to the role of the broader curriculum in providing meaningful contexts for children to develop and apply their learning in these subjects.

However, genuine breadth and balance requires depth and quality in the teaching and learning of each subject in the curriculum. Our Projects on a Page curriculum ensures that D&T makes a high quality contribution to a broad and balanced primary curriculum, helping to raise standards in English and mathematics. Research suggests D&T is one of primary-aged children's favourite subjects. Our curriculum maximises their enjoyment by providing scope for teachers to meet children's needs and interests through creative and motivating projects within a range of contexts. Our curriculum is based on the six concepts of good practice in D&T. These need to be in place in teachers' planning to ensure children's learning is genuinely design and technological in nature.

Work Together Concepts	Outcomes
User	Children should have a clear idea of who they are designing and making products for, considering their needs, wants, interests or preferences. The user could be themselves, an imaginary character, another person, client, consumer or a specific target audience.
Purpose	Children should know what the products they design and make are for. Each product should perform a clearly defined task that can be evaluated in use.
Functionality	Children should design and make products that function in some way to be successful. Products often combine aesthetic qualities with functional characteristics. In D&T, it is insufficient for children to design and make products which are purely aesthetic
Design decisions	When designing and making, children need opportunities to make informed decisions such as selecting materials, components and techniques and deciding what form the products will take, how they will work, what task they will perform and who they are for
Innovation	When designing and making, children need some scope to be original with their thinking. Projects that encourage innovation lead to a range of design ideas and products being developed, characterised by engaging, open-ended starting points for children's learning.
Authenticity	Children should design and make products that are believable, real and meaningful to themselves i.e. not replicas or reproductions or models which do not provide opportunities for children to make design decisions with clear users and purposes in mind.

Enrichment

We enrich our Design Technology curriculum with many opportunities for children to explore the “work together concepts” in a fun, creative and immersive way. Our enrichments enables the children to take their learning beyond the national curriculum expectations and learn from experts in the field.

Our after school cooking club equips the children with the knowledge and skills needed to excel in food technology. The children learn about the Eatwell plate and how meals and foods can be made. These meals are shared with parents and carers.

Whole School Summary

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Reception					
Design and make a snowman Christmas decoration using socks, rice to fill and buttons and ribbons to decorate for their family.		Design and make a junk model house using various junk materials for a character from a story.		Design and make a fruit kebab using fruit the children have tasted and evaluated.	
Year 1					
Design, make and evaluate a fruit smoothie to serve at a children’s party.		Design, make and evaluate a celebration card with a sliding mechanism to give to a family member/members.		Design, make and evaluate a framed textile free standing picture for your bedroom taking inspiration from graphic designers, April Greiman and Rob Janoff	
Year 2					
Design, make and evaluate a glove puppet for myself to use for imaginary role-play.		Design, make and evaluate a two - wheeled toy which will have a mechanism for making it move. The moving toy will have working wheels and axles and be suitable for a child to play with.		Design, make and evaluate a healthy wrap/sandwich for my family and I to share at a picnic together.	
Year 3					
Design, make and evaluate a container to keep your snack money secure.		Design, make and evaluate a musical instrument (shell structure) that can be used as part of a class performance.		Design, make and evaluate a pizza for myself to eat as a healthy snack.	
Year 4					
Design, make and evaluate a woven fabric wall hanging, inspired by Annie Albers to give as a gift to a friend. The 3D product will be created from a 2D design.		Design, make and evaluate a healthy muffin for myself and my family for breakfast. Consider how the muffin recipe could be modified to suit a range of dietary needs.		Design, make and evaluate a torch for my family to use on a camping trip.	
Year 5					

Design, make and evaluate some biscuits which contain a seasonal ingredient. The biscuits are to be sold to children at a charity fund raiser.	Design, make and evaluate a 3D soft toy with component parts, which will be safe to give to a child over the age of 3.	Design, make and evaluate a gazebo model suitable to use (scaled up) at a school fair for adults and children. Consider ways a pulley system could be used to provide shade.
Year 6		
Design, make and evaluate a fabric gift bag for a person of your choice. The bag should be embellished using a variety of ways.	Design, make and evaluate a fairground ride to demonstrate how a mechanism can be powered by an electrical system. The ride should be suitable for a named age range.	Design, make and evaluate a bread product suitable for a family to share at a cultural or religious celebration. Consider any possible special dietary needs.

EYFS Skill Development

Expressive Arts and Design

- Manipulates materials to achieve a planned effect.
- Constructs with a purpose in mind, using a variety of resources.
- Uses simple tools and techniques competently and appropriately.
- Selects appropriate resources and adapts work where necessary.
- Selects tools and techniques needed to shape, assemble and join materials they are using.

Early Learning Goal

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

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.

SMSC in Writing at St Matthew's



Design Technology	We promote spiritual development by...
	Allowing students to be innovative, creative and reflective. Encouraging students to express their thoughts through their designing and their abilities through the making process. Investigating existing products and design aspects so that they can develop an understanding of what successful design is and how it can enhance our world. Facilitating the process of creative thinking and innovation which inspires students to use their talents and develop their self-confidence. Challenging students to seek solutions and adapt their thinking to consider the needs of others.
	We promote moral development by...
	Encouraging students to develop a sense of 'moral conscience' through focusing upon the moral dilemmas raised in designing and making new products. Focussing on issues such as Fair-Trade products, animal welfare and differing dietary needs. This allows students to have a voice and consider their own beliefs whilst listening respectfully to the beliefs of others. Considering the wider impact of design on the environment and encouraging students to consider carefully the materials & components they will use. Helping students to think about sustainability and how recycled and reusable materials can be used. Developing students' sense of responsibility as designers and consumers.
	We promote social development by...
	Providing students with opportunities to work as a team and interact socially. Allowing students to share ideas and equipment and develop an understanding of how to work safely and with consideration of the needs of others. Promoting equality across the subject area and providing all students opportunities to develop a range of social skills such as respect and tolerance for the ideas of others.
	We promote cultural development by...
	Seeking to expand students' knowledge of other cultures and their influences on design. Setting challenges to explore and understand different cultures through research, practical experience and sensory analysis. Encouraging students to reflect on their products and existing products and the possible impact those products might have on individuals within our diverse society.

Skills Progression

Designing	Key Stage 1	Key Stage 2
Understanding contexts, users and purposes	Across KS1 pupils should: • work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • state what products they are designing and making • say whether their products are for themselves or other users • describe what their products are for • say how their products will work • say how they will make their products suitable for their intended users • use simple design criteria to help develop their ideas	Across KS2 pupils should: • work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment • describe the purpose of their products • indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work In early KS2 pupils should also: • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their ideas In late KS2 pupils should also: • carry out research, using surveys, interviews, questionnaires and web-based resources • identify the needs, wants, preferences and values of particular individuals and groups • <i>develop a simple design specification to guide their thinking</i>
Generating, developing, modelling and communicating ideas	Across KS1 pupils should: • generate ideas by drawing on their own experiences • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing • model ideas by exploring materials, components and construction kits and by making templates and mock-ups • use information and communication technology, where appropriate, to develop and communicate their ideas	Across KS2 pupils should: • share and clarify ideas through discussion • model their ideas using prototypes and pattern pieces • use annotated sketches, cross-sectional drawings and exploded diagrams to develop and communicate their ideas • use computer-aided design to develop and communicate their ideas In early KS2 pupils should also: • generate realistic ideas, focusing on the needs of the user • <i>make design decisions that take account of the availability of resources</i> In late KS2 pupils should also: • generate innovative ideas, drawing on research • <i>make design decisions, taking account of constraints such as time, resources and cost</i>

Making	Key Stage 1	Key Stage 2
Planning	Across KS1 pupils should: • <i>plan by suggesting what to do next</i> • select from a range of tools and equipment, <i>explaining their choices</i> • select from a range of materials and components according to their characteristics	Across KS2 pupils should: • select tools and equipment suitable for the task • <i>explain their choice of tools and equipment in relation to the skills and techniques they will be using</i> • select materials and components suitable for the task • explain their choice of materials and components according to functional properties and aesthetic qualities In early KS2 pupils should also: • <i>order the main stages of making</i> In late KS2 pupils should also: • <i>produce appropriate lists of tools, equipment and materials that they need</i> • <i>formulate step-by-step plans as a guide to making</i>
Practical skills and techniques	Across KS1 pupils should: • follow procedures for safety and hygiene • use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components • measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	Across KS2 pupils should: • follow procedures for safety and hygiene • use a wider range of materials and components than KS1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components In early KS2 pupils should also: • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy In late KS2 pupils should also: • accurately measure, mark out, cut and shape materials and components • accurately assemble, join and combine materials and components • accurately apply a range of finishing techniques, including those from art and design • <i>use techniques that involve a number of steps</i> • demonstrate resourcefulness when tackling practical problems

Evaluating	Key Stage 1	Key Stage 2
Own ideas and products	Across KS1 pupils should: • talk about their design ideas and what they are making • make simple judgements about their products and ideas against design criteria • <i>suggest how their products could be improved</i>	Across KS2 pupils should: • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work In early KS2 pupils should also: • refer to their design criteria as they design and make • use their design criteria to evaluate their completed products In late KS2 pupils should also: • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • <i>evaluate their ideas and products against their original design specification</i>
Existing products	Across KS1 pupils should explore: • what products are • who products are for • what products are for • how products work • how products are used • where products might be used • what materials products are made from • what they like and dislike about products	Across KS2 pupils should investigate and analyse: • how well products have been designed • how well products have been made • why materials have been chosen • what methods of construction have been used • how well products work • how well products achieve their purposes • how well products meet user needs and wants In early KS2 pupils should also investigate and analyse: • who designed and made the products • where products were designed and made • when products were designed and made • whether products can be recycled or reused In late KS2 pupils should also investigate and analyse: • how much products cost to make • how innovative products are • how sustainable the materials in products are • what impact products have beyond their intended purpose
Key events and individuals	Not a requirement in KS1	Across KS2 pupils should know: • about inventors, designers, engineers, chefs and manufacturers who have developed ground-breaking products

Technical knowledge	Key Stage 1	Key Stage 2
Making products work	Across KS1 pupils should know: • about the simple working characteristics of materials and components • about the movement of simple mechanisms such as levers, sliders, wheels and axles • how freestanding structures can be made stronger, stiffer and more stable • <i>that a 3-D textiles product can be assembled from two identical fabric shapes</i> • <i>that food ingredients should be combined according to their sensory characteristics</i> • <i>the correct technical vocabulary for the projects they are undertaking</i>	Across KS2 pupils should know: • how to use learning from science to help design and make products that work • how to use learning from mathematics to help design and make products that work • that materials have both functional properties and aesthetic qualities • <i>that materials can be combined and mixed to create more useful characteristics</i> • that mechanical and electrical systems have an input, process and output • <i>the correct technical vocabulary for the projects they are undertaking</i> In early KS2 pupils should also know: • how mechanical systems such as levers and linkages or pneumatic systems create movement • how simple electrical circuits and components can be used to create functional products • how to program a computer to control their products • how to make strong, stiff shell structures • <i>that a single fabric shape can be used to make a 3D textiles product</i> • <i>that food ingredients can be fresh, pre-cooked and processed</i> In late KS2 pupils should also know: • how mechanical systems such as cams or pulleys or gears create movement • how more complex electrical circuits and components can be used to create functional products • how to program a computer to monitor changes in the environment and control their products • how to reinforce and strengthen a 3D framework • <i>that a 3D textiles product can be made from a combination of fabric shapes</i> • <i>that a recipe can be adapted by adding or substituting one or more ingredients</i>

Cooking and nutrition	Key Stage 1	Key Stage 2
Where food comes from	Across KS1 pupils should know: • that all food comes from plants or animals • that food has to be farmed, grown elsewhere (e.g. home) or caught	Across KS2 pupils should know: • that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world In late KS2 pupils should also know: • that seasons may affect the food available • how food is processed into ingredients that can be eaten or used in cooking
Food preparation, cooking and nutrition	Across KS1 pupils should know: • how to name and sort foods into the five groups in The eatwell plate • that everyone should eat at least five portions of fruit and vegetables every day • how to prepare simple dishes safely and hygienically, without using a heat source • how to use techniques such as cutting, peeling and grating	Across KS2 pupils should know: • how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source • how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking In early KS2 pupils should also know: • that a healthy diet is made up from a variety and balance of different food and drink, as depicted in The eatwell plate • that to be active and healthy, food and drink are needed to provide energy for the body In late KS2 pupils should also know: • <i>that recipes can be adapted to change the appearance, taste, texture and aroma</i> • that different food and drink contain different substances – nutrients, water and fibre – that are needed for health

Design Technology: Crucial Knowledge

Reception	Expressive Arts and Design	• Explore different materials to construct with • Develop their own ideas and then decide which materials to use to express them • Children to use different techniques for joining materials, such as how to use adhesive tape and different sorts of glue • Create collaboratively, sharing ideas, resources and skills • Explore, use and refine a variety of artistic effects to express their ideas
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Year 1 Year 2	Food • Preparing fruit and vegetables Mechanisms • Sliders and levers • Wheels and axles Structures • Freestanding structures Textiles • Templates and joining	Food • explain where in the world different foods originate from; • understand that all food comes from plants or animals; • understand that food has to be farmed, grown elsewhere (e.g. home) or caught; • name and sort foods into the five groups in the Eatwell Guide; • understand that everyone should eat at least five portions of fruit and vegetables every day and start to explain why; • use what they know about the Eatwell Guide to design and prepare dishes Mechanisms • Explore and use sliders and levers. • Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project. Structures • Know how to make freestanding structures stronger, stiffer and more stable. • Know and use technical vocabulary relevant to the project Textiles • 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.
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Year 3 Year 4	Food • Healthy and varied diet Electrical systems • Simple circuits and switches Mechanisms • Levers and linkages Structures • Shell structures Textiles • 2D shape to 3D product	Food • 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. Electrical Systems • 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. Mechanisms • Understand and use lever and linkage mechanisms. • Distinguish between fixed and loose pivots. • Know and use technical vocabulary relevant to the project. Structures • 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. Textiles • 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
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Year 5 Year 6	Electrical systems • More complex switches Food • Celebrating culture and seasonality Mechanisms • Pulleys or gears Structures • Frame structures Textiles • Combining different fabric shapes	Electrical systems • 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. Food • 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 • 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. Structures • Understand how to strengthen, stiffen and reinforce 3-D frameworks. • Know and use technical vocabulary relevant to the project. Textiles • 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.
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Medium Term Plans and Knowledge Organisers

Year 1

1. Year Groups Years 1/2	2. Aspect of D&T Food Focus Preparing fruit	4. What could children design, make and evaluate? fruit salads fruit yogurt fruit drinks fruit jelly fruit smoothies vegetable salads fruit and vegetable kebabs	5. Intended users themselves parents siblings grandparents friends peers at school younger/older children visitors	6. Purpose of products picnic celebration party school event sports day pleasure café corner	16. Possible resources range of fresh fruit and vegetables chopping boards, knives , peelers, graters, skewers, juicers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities	17. 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
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Healthy Eating Festivals and Celebrations Teddy Bear Picnic Food and Farming Ourselves Senses Growing other – specify	8. Possible contexts home school gardens playgrounds local community culture industry	9. Project title Design, make and evaluate a tropical fruit salad boat to serve at a children's party.	yogurt making machine or blender, if appropriate	
3. Key learning in design and technology 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. Designing - Design appealing products for a particular user based on simple design criteria. - Generate initial ideas and design criteria through investigating a variety of fruit and vegetables. - Communicate these ideas through talk and drawings. Making - Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely. - Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product. Evaluating - Taste and evaluate a range of fruit and vegetables to determine the intended user's preferences. - Evaluate ideas and finished products against design criteria, including intended user and purpose. Technical knowledge and understanding - Understand where a range of fruit and vegetables come from e.g. farmed or grown at home. - Understand and use basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of The eatwell plate. - Know and use technical and sensory vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) - Children examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. <i>What is this called? Who has eaten this fruit/vegetable before? Where is it grown? When can it be harvested? What are its taste, smell, texture and appearance? What will it look like if we peel it or cut it in half? What are the different parts called?</i> - Provide opportunities for children to handle, smell and taste fruit and vegetables in order to describe them through talking and drawing. e.g. <i>What words can we use to describe the shape, colour, feel, taste?</i> - Evaluate existing products to determine what the children like best; provide opportunities for the children to investigate preferences of their intended users/suitability for intended purposes e.g. <i>What do you prefer and why? What might we want to include in our product to meet our user's preferences? Which fruit/vegetables might be the best for our product to match the occasion/purpose?</i>		11. Related learning in other subjects Science – understand that plants have leaves, stems, roots, flowers and fruits; understand the importance of growing plants and how seasons affect growth. Spoken language – children develop and use a sensory vocabulary. Writing – develop descriptive writing based on first-hand experience of tasting fruit and vegetables. Mathematics – carry out a simple survey to find out which are the favourite fruits/vegetables; construct and interpret the information in e.g. pictograms and bar graphs.		
		12. Focused Tasks (FTs) Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i> Demonstrate how to use simple utensils and provide opportunities for the children to practise food-processing skills such as washing, grating, peeling, slicing, squeezing e.g. <i>Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way? Discuss different effects achieved by different processes.</i> Discuss healthy eating advice, including eating more fruit and vegetables; using The eatwell plate model talk about the importance of fruit and vegetables in our balanced diet e.g. <i>Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them?</i>		13. Related learning in other subjects Spoken language – ask questions to check understanding; use the correct terminology for equipment and food processes. Writing – instructions on how to use one of the utensils; how to prepare e.g. a fruit for eating. Science – talk about a balanced diet, different types of food and hygiene.		
		14. Design, Make and Evaluate Assignment (DMEA) - Set a context for designing and making which is authentic and meaningful. - Discuss with the children the 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 development and evaluation of children's products e.g. <i>Who/what is the product for? What will make our product unique/different? How will we know that we designed and made a successful product?</i> - Use talk and drawings when planning for a product; ask the children to develop, model and communicate their ideas e.g. <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i> - Talk to the children about the main stages in making, considering appropriate utensils and food processes they learnt about through IEAs and FTs. - 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.		15. Related learning in other subjects Spoken language – ask questions to develop and check understanding, develop technical and sensory vocabulary and build knowledge. Art and design – use and develop drawing skills. Writing – children write a simple account about how they made their food product. Computing – use digital photographs to help order the main stages of making and support children's writing.		19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.
					20. Overall potential of project 	

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 1 Design Technology Autumn

Design, make and evaluate a tropical fruit salad boat to serve at a children's party.

We will be able to:

Make a tropical fruit salad boat suitable to serve at a children's party.

Crucial Knowledge:

- Fruit is grown in lots of different countries.
- Tropical fruits are fruits that are grown in warm tropical countries.
- A fruit boat is made using fruit in the shape of a boat.
- Some fruit may be peeled to remove the skin.
- Citrus fruit juice from oranges and lemons, can be added to the fruit to stop it from turning brown.
- When preparing fruit, or any food, it is important to wash your hands, roll up any long sleeves and tie long hair into a bobble.

Vocabulary:

- **Taste**- the sensation of flavor in the mouth.
- **Texture**- how something feels.
- **Appearance**- the way that something looks.
- **Evaluate**- to form an idea about something.
- **Examine**- look at in detail.
- **Food hygiene**- handling food correctly and safely.



Year Groups Years 1/2	1. Aspect of D&T Mechanisms	4. What could children design, make and evaluate? class/group storybook poster display <u>greetings card</u> class/group information book storyboard	5. Intended users themselves younger children parents grandparents friends visitor to school <u>family</u>	6. Purpose of products celebration event information pleasure interests hobbies educational other – specify	16. Possible resources books and everyday products with levers and slider mechanisms	17. Key vocabulary <u>slider, lever, pivot, slot,</u> bridge/guide
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Festivals and Celebrations Traditional Tales Nursery Rhymes history-based topic geography-based topic science-based topic other – specify	8. Possible contexts imaginary story-based toys games people who help us home school garden playground local community environment other – specify	Design, make and evaluate a celebration card with a sliding mechanism for a family <u>member/members.</u>	slider and lever teaching aids card strips, card rectangles, <u>paper,</u> masking tape, paper fasteners, paper binders, stick glue, PVA glue, finishing materials and media left/right handed <u>scissors,</u> cutting mats, card drills	card, masking <u>tape,</u> paper fastener, join <u>pull, push, up, down,</u> <u>straight, curve, forwards,</u> <u>backwards</u>
3. Key learning in design and technology 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. Designing - Generate ideas based on simple design criteria and their own experiences, explaining what they could make. - Develop, model and communicate their ideas through drawings and mock-ups with card and paper. Making - Plan by suggesting what to do next. - Select and use tools, explaining their choices, to cut, shape and join paper and card. - Use simple finishing techniques suitable for the product they are creating. Evaluating - Explore a range of existing books and everyday products that use simple sliders and levers. - Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria. Technical knowledge and understanding - Explore and use sliders and levers. - Understand that different mechanisms produce different types of movement. - Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) - Children explore and evaluate a collection of books and everyday products that have moving parts, including those with levers and sliders. e.g. <u>What is it? Who is it for? What is it for?</u> - Use questions to develop children's understanding e.g. <u>What do you think will move? How will you make it move? What part of the product moved and how did it move? How do you think the mechanism works? What else could move in the product? How well does it work?</u> - Introduce and develop vocabulary e.g. lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out.	11. Related learning in other subjects Spoken language – participate in discussion about books and other products with moving parts, taking turns and listening to what others say. Ask relevant questions to extend their knowledge and understanding. Build technical and directional vocabulary.	12. Focused Tasks (FTs) Demonstrate simple levers and sliders to the children using prepared teaching aids. It is helpful if these are also used in context e.g. the slider is used to show a snail appearing from behind a stone, the lever is used to show a butterfly flying to a flower. - Use questions to develop children's understanding e.g. <u>How does the slider move? How does the lever move? Which part of the mechanism is the pivot? What does the movement of the slider and lever remind you of?</u> - Following teacher demonstration of the correct use of tools and materials, children should develop their knowledge and skills by replicating the slider and lever teaching aids. Encourage children to add pictures to their mechanisms.	13. Related learning in other subjects Spoken language – children listen and respond appropriately to adults. Ask relevant questions to extend their knowledge and understanding. Build technical and directional vocabulary. Mathematics – describe position, direction and movement. Use appropriate standard and non-standard measures.	14. Design, Make and Evaluate Assignment (DMEA) - Discuss with the children what they will be designing, making and evaluating e.g. <u>Who will your product be for? What will be its purpose? How do you want it to move? Will you use a lever or a slider?</u> - Generate simple design criteria with the children e.g. the mechanism should work smoothly, it should make the right type of movement. - Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with paper and card. - Discuss the finishing techniques the children might use e.g. using digital text and graphics, paint, felt tipped pens or collage. - As a whole class, talk about the order in which the mechanisms will be made. - Ask children to evaluate their developing ideas and final products against the original design criteria.
		15. Related learning in other subjects Spoken language – ask relevant questions to extend their knowledge and understanding. Build technical and directional vocabulary. Use spoken language to develop understanding through imagining and exploring ideas. Art and design – use colour, pattern, line, shape. Computing – digital graphics and text could be incorporated into final products as the background or moving parts.	16. Possible resources books and everyday products with levers and slider mechanisms	17. Key vocabulary <u>slider, lever, pivot, slot,</u> bridge/guide	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.
		20. Overall potential of project				

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 1 Design Technology Spring Levers and Sliders

Design, make and evaluate a celebration card with a sliding mechanism to give to a family member/members.

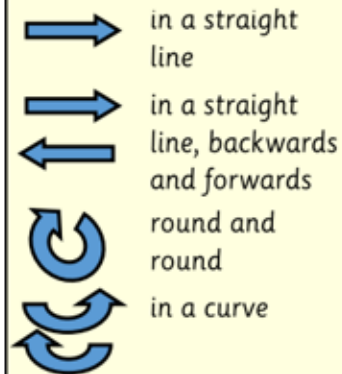
Crucial Knowledge:

- Sliders move from side to side and up and down.
- A lever is a bar that turns around a point.
- Levers can be used with or without a slot.
- Pivot is the point at which a lever turns.
- A mechanism is components acting together to make an action take place.
- Flaps can be used to make things appear and disappear.

Simple mechanisms move:

- In a straight line.
- In a straight line backwards and forwards.
- Round and round.
- In a curve.

Simple mechanisms move:



Vocabulary:

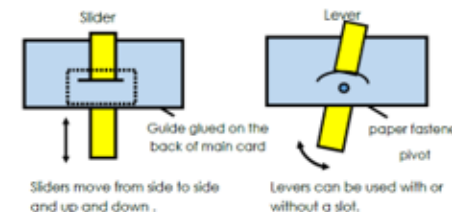
Mechanism - a device used to create movement in a product.

Lever - a rigid bar which moves around a pivot. Levers are used in many everyday products.

Slider - a rigid bar which moves backwards and forwards along a straight line. Unlike a lever, a slider does not have a pivot point.

Slot - the long cut through which a lever or slider is placed to enable part of a picture to move.

Guide or bridge - a short card strip can be used to keep sliders in place and control movement.



1. Year Groups Years 1/2	2. Aspect of D&T Structures Focus Freestanding structures	4. What could children design, make and evaluate? enclosures for farm or zoo animals playground/park/garden furniture bridge for Billy Goats Gruff playground equipment Free standing picture frame	5. Intended users themselves school community friends children of different ages general public older people story characters teddy animal other – specify	6. Purpose of products imaginary role-play pleasure rest recreation health leisure Decoration	16. Possible resources photographs of various structures construction kits that can be used to construct freestanding structures e.g. walls, towers, frameworks paper, card , plastic sheet, paper and plastic straws, pipe cleaners reclaimed materials including small containers, card boxes, cotton reels string, masking tape PVA glue, Plasticine, left/right handed scissors , hole punch, stapler finishing media and materials	17. 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
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Traditional Tales Nursery Rhymes Buildings Healthy Living Farming Our School Myself Animals Parks and Playgrounds other - specify	8. Possible contexts imaginary story-based classroom school grounds gardens local community leisure health environment home	9. Project title Design, make and evaluate a framed textile free standing picture for your bedroom taking inspiration from graphic designers, April Greiman and Rob –	11. Related learning in other subjects Geography – use simple fieldwork and observational skills to study the geography of their school and its grounds and the key physical features of its surrounding environment. Spoken language – participate in discussion about various structures, taking turns and listening to what others say. Ask relevant questions to extend their knowledge and understanding. Build technical vocabulary.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
3. Key learning in design and technology Prior learning - Experience of using construction kits to build walls, towers and frameworks. - Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. - Experience of different methods of joining card and paper. Designing - Generate ideas based on simple design criteria and their own experiences, explaining what they could make. - Develop, model and communicate their ideas through talking, mock-ups and drawings. Making - Plan by suggesting what to do next. - Select and use tools, skills and techniques, explaining their choices. - Select new and reclaimed materials and construction kits to build their structures. - Use simple finishing techniques suitable for the structure they are creating. Evaluating - Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings. - Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria. Technical knowledge and understanding - Know how to make freestanding structures stronger, stiffer and more stable. - Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) - Go on a walk and/or look at photographs of the local area to explore structures such as playground equipment, street furniture, walls, towers and bridges e.g. What are the structures called and what is their purpose? Who might use them? What materials have been used? Why have these been chosen? How have the parts been joined together? How have the structures been made strong enough? How have they been made stable? - Where possible, ask the children to draw or photograph the structures they have been exploring and label with the correct technical vocabulary in relation to the structure, materials used and shapes e.g. wall, tower, framework, base, joint, metal, wood, plastic, brick, triangle, square, rectangle, cuboid, cube.	12. Focused Tasks (FTs) Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools and new and reclaimed materials that children are likely to use to make their structures. Discuss the suitability of materials for their products according to their characteristics. - Ask the children to build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks and those that make frameworks e.g. How can you stop your structures from falling over? How they can be made stronger and stiffer in order to carry a load? Children could make models of the structures they have seen in school and the local area. Ask children to fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joints. Encourage them to think about how folding materials can make them stronger, stiffer, stand up and be more stable e.g. Can they support an object on top of their structures without it falling over or breaking?	13. Related learning in other subjects Mathematics – use appropriate standard and non-standard measures. Recognise and name common 2-D and 3-D shapes. Science – think about the properties of materials that make them suitable or unsuitable for particular purposes. Spoken language – ask relevant questions to extend their knowledge and understanding. Build technical vocabulary.	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	
		14. Design, Make and Evaluate Assignment (DMEA) - Discuss with the children what structure they will be designing, making and evaluating e.g. Who will your product be for? What will be its purpose? What materials will you use? How will you make it strong and stable? - Generate some simple design criteria with the children e.g. the structure should stand up on its own, it should be strong enough to carry Teddy. - Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with construction kits and other materials. - As a whole class, plan the order in which the structures will be made. Children could make their final products from construction kits, new and reclaimed materials or any combination of these, according to their characteristics. - Ask children to evaluate their developing ideas and final products against original design criteria.	15. Related learning in other subjects Spoken language – ask relevant questions to extend their knowledge and understanding. Build technical vocabulary. Use spoken language to develop understanding through imagining and exploring ideas. Art and design – use colour, pattern, line, shape. Use and develop drawing skills. Science – think about the properties of materials that make them suitable or unsuitable for particular purposes.	20. Overall potential of project 		

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 1 Design Technology Summer –



Design, make and evaluate a framed textile free standing picture for your bedroom taking inspiration from graphic designers, April Greiman and Rob Janoff

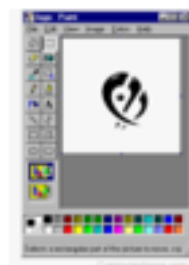
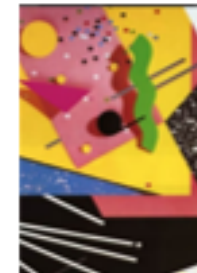
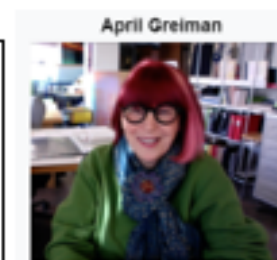
You will be able to make a picture frame which is free standing and which has a textile design using inspiration from designers such as April Greiman and Rob Janoff.

Crucial Knowledge:

- April Greiman is an American graphic designer known for her digital design. Her designs are characterized by colour and shape.
- Rob Janoff is best known for his design of the Apple logo. Janoff's wanted a design that people would remember for years to come. His designs are simple but colourful.
- Simple designs can be made using a computer programme such as 'Paint.'
- A free-standing picture frame will need a stand to support it.
- Using shape and colour will give a design impact.

Vocabulary:

- Design - a drawing of something you want to make.
- Paint - a computer programme which can help with design work.
- Structure- a shape built for a reason. It can be free standing, which means that it can stand up by itself.
- Stand - a strong structure which will allow your frame to stand up.
- Impact- something which catches attention.



Year 2

1. Year Groups Year 1/2	2. Aspect of D&T Mechanisms Focus Wheels and axles	4. What could children design, make and evaluate? <u>push/pull toys</u> e.g. emergency service vehicle carnival float farm vehicle clown's car vehicle for imaginary/story character shopping trolley other – specify	5. Intended users themselves people who help us friends story character farmers/farm animals teddy class doll child	6. Purpose of products making work or everyday life easier <u>moving objects</u> toy vehicle to play with solving a problem for a story character other – specify	16. Possible resources <u>selection of toy toys with differently fixed axles</u> card boxes, card, cotton reels, plastic <u>tubing</u> , <u>dowel</u> , clothes pegs, <u>paper sticks/dowel</u> , <u>paper/plastic straws</u> , card discs, MDF wheels	17. Key vocabulary vehicle, wheel, <u>axle</u> , <u>axle holder</u> , <u>chassis</u> , <u>body</u> , cab <u>assembling</u> , <u>cutting</u> , <u>joining</u> , <u>shaping</u> , <u>finishing</u> , <u>fixed</u> , <u>free</u> , <u>moving</u> , <u>mechanism</u> <u>names of tools</u> , <u>equipment and materials</u> , <u>used</u> <u>design</u> , <u>make</u> , <u>evaluate</u> , <u>purpose</u> , <u>user</u> , <u>criteria</u> , <u>functional</u>
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics/themes People Who Help Us Helping Others Our Local Community Food and Farming Traditional Stories Fairy Tales Transport Nursery Rhymes Toys other – specify	8. Possible contexts imaginary story-based home school leisure culture local community other – specify	9. Project title <u>Design, make and evaluate a two-wheeled toy which will have a mechanism for making it move. The moving toy will have working wheels and axles and be suitable for a child to play with.</u>	single hole punch, card drill, cutting mat, <u>masking tape</u> , PVA glue, paint, thin/thick paint brushes, felt tip pens, decorative paper, double sided sticky fixers, junior hacksaw, vice, left/right handed scissors	11. Related learning in other subjects • Science – working scientifically: ask simple questions and observe closely. Explore use of everyday materials. • Mathematics – number of wheels, more than, less than, equal. • Spoken Language – use of technical vocabulary. Ask relevant questions to extend understanding and build vocabulary and knowledge.
3. Key learning in design and technology Prior learning • Assembled vehicles with moving wheels using construction kits. • Explore 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. Designing • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. Making • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. Evaluating • Explore and evaluate a range of products with wheels and axles. • Evaluate their ideas throughout and their products against original criteria. Technical knowledge and understanding • Explore and use wheels, axles and axle holders. • Distinguish between fixed and freely moving axles. • Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) • <u>Explore and evaluate a range of wheeled products</u> such as toys and everyday objects. Through questioning, direct children's observations e.g. the number, size, position and methods of fixing wheels and axles. <u>How do you think the wheels move? How do you think the wheels are fixed on? Why do you think the product has this number of wheels? Why do you think the wheels are round?</u> • Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders. • Walk around the school building and grounds, recording how wheels and axles are used in daily life. • Read a story or non-fiction book that includes a wheeled product. Use this to introduce relevant vocabulary and to emphasise user and purpose.	12. Focused Tasks (FTs) • <u>Using construction kits with wheels and axles</u> , ask children to make a product that moves. • Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles. • Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders. • Ensure that children are taught how to mark out, hold, cut and join materials and components correctly. • Using samples of materials and components they will use when designing and making, ask the children <u>to assemble some examples of wheel, axle, axle holder combinations</u> . Display the work completed as a reference for their DMEA.	13. Related learning in other subjects • Spoken language – give well-structured descriptions and explanations. Develop speaking and listening skills. Learn relevant technical vocabulary. • Mathematics – measuring length using non-standard and standard units.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify 19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	
		14. Design, Make and Evaluate Assignment (DMEA) • Discuss with the children what they will be designing, making and evaluating within an authentic context. • With the children identify a user and purpose for the product and generate simple criteria. • Ask children to generate, develop and communicate their ideas as appropriate e.g. through talk and drawing. Talk about, evaluate and share ideas with other children/adults. • Make their wheel and axle product using their design ideas and criteria as an ongoing guide. • Discuss how the children might add finishing techniques to their product with reference to their design ideas and criteria. Direct the children to information and communication technology opportunities such as clip art, word processing, paint or simple drawing programs. • Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.	15. Related learning in other subjects • Spoken language – use spoken language to develop understanding through imagining and exploring ideas. • Art and Design – use a range of media and materials creatively to design and make products. • Computing – use technology purposefully to create and manipulate digital content. • Mathematics – measurement using non-standard and standard units.	20. Overall potential of project 		

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 2 Design Technology Summer –

Design, make and evaluate a two -wheeled toy which will have a mechanism for making it move. The moving toy will have working wheels and axles and be suitable for a child to play with.

You will be able to make a two -wheeled toy which will have a mechanism for making it move. The pull along toy will have working wheels and axles.

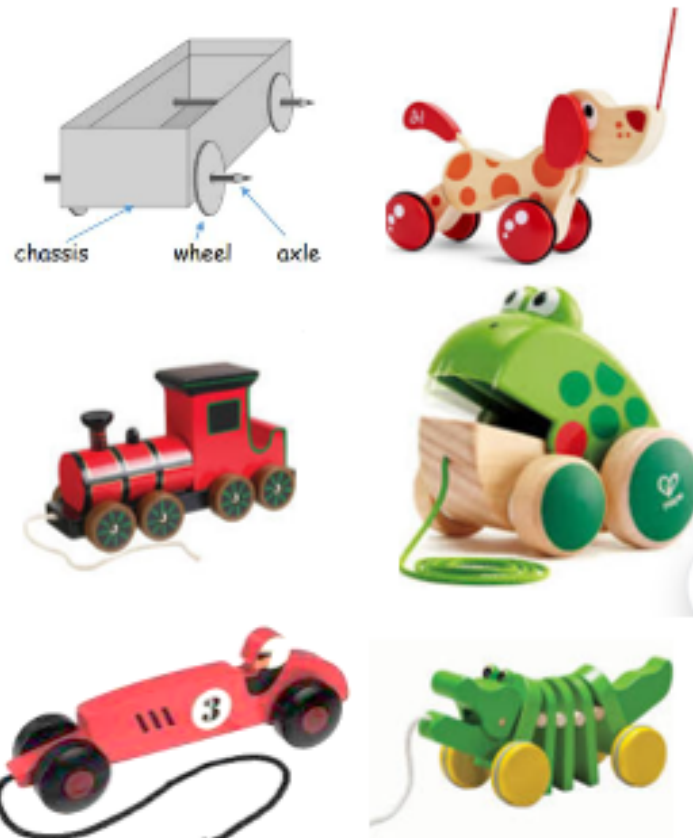
Crucial Knowledge:

- Wheels are mechanisms by which objects can move.
- There are lots of different types of moving toys such as cars, trains and animals.
- Moving toys need to have at least two wheels.
- The wheels can have a central hole will run straight and smoothly or wheels with a hole offset (not in centre) will run with a rise and fall action. Wheels with a hole offset (not in centre), and at opposite sides to each other, produce a wobbly ride!



Vocabulary:

- Axle - a rod that allows a wheel to turn.
- Mechanism - part of a machine that has a function.
- Dowel - a wooden rod that can be used as an axle.
- Friction - the force between two surfaces trying to slide or sliding across one another.
- Chassis - the base on which a toy is built.



1. Year Groups Year 2	2. Aspect of D&T Textiles Focus Templates and joining techniques	4. What could children design, make and evaluate? glove puppet finger puppet simple bag clothes for teddy/soft toy/class doll fabric placemat other – specify	5. Intended users themselves friends younger children parents grandparents teddy story character class doll soft toy other – specify	6. Purpose of products plays with puppets clothes for toys carrying and storing items protecting surfaces imaginary role-play other – specify	16. Possible resources existing products linked to chosen project variety of textiles e.g. dipryl, felt, reclaimed fabric thread, pins, needles, magnet, staplers, staples, fabric glue left/right-handed scissors items for finishing e.g. buttons, wool, fabric paints, sequins drawing and colouring media	17. Key vocabulary names of existing products, joining and finishing techniques, tools, fabrics and components embellishments template, pattern pieces, mark out, join, decorate, finish features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function
2. STEM Existing Knowledge Maths –Measuring accurately Science –Recycling, material properties Computing – Video links demonstrating techniques		7. Links to topics and themes Toys Festivals Stories Nursery Rhymes Celebrations Homes other – specify	8. Possible contexts entertainment leisure home school recycling/reusing other – specify	9. Project title Design, make and evaluate a glove puppet for myself to use for imaginary role-play.		
3. Key learning in design and technology Prior learning • Explored and used different fabrics. • Cut and joined fabrics with simple techniques. • Thought about the user and purpose of products.		10. Investigative and Evaluative Activities (IEAs) • Children investigate and evaluate existing products linked to the chosen project. Explore and compare e.g. fabrics, joining techniques, finishing techniques and fastenings used. • Use questions to develop children's understanding e.g. How many parts is it made from? What is it joined with? How is it finished? Why do you think these joining techniques have been chosen? How is it fastened? Who might use it and why? • Make drawings of existing products, stating the user and purpose. Identify and label, if appropriate, the fabrics, fastenings and techniques used.		11. Related learning in other subjects • Spoken language – ask relevant questions to build understanding and their vocabulary. • Art and design – quick drawings or detailed observational drawings of one product to develop and share ideas.		
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.		12. Focused Tasks (FTs) • Investigate fabrics to determine which is best for the purpose of the product they are creating. • Using prepared teaching aids, demonstrate the use of a template or simple paper pattern. Children could make their own templates or paper patterns. If necessary, they can use ones provided by the teacher. • Using prepared teaching aids, demonstrate the correct use of appropriate tools to mark out, tape or pin the fabric to the templates or paper patterns and cut out the relevant fabric pieces for the product. • Using prepared teaching aids, demonstrate appropriate examples of joining techniques for children to practise in guided groups e.g. running stitch including threading own needle, stapling, lacing and gluing. Talk about the advantages and disadvantages of each technique. • Using prepared teaching aids, demonstrate examples of finishing techniques for children to practise in guided groups e.g. sewing buttons, 3-D fabric paint, gluing sequins, printing.		13. Related learning in other subjects • Science – everyday materials. Investigate physical properties of fabric types against suitability for the product to be made. • Spoken language – ask questions throughout the process to check understanding, develop vocabulary and build knowledge. Listen and respond to adults. • Art and design – use colour, pattern, texture, and shape as appropriate.		18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
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.		14. Design, Make and Evaluate Assignment (DMEA) • Provide the children with a context that is authentic. Discuss with children the purpose and user of the products they will be designing, making and evaluating. Design criteria developed with the teacher should be used to guide the development and evaluation of the children's products. • Ask the children to generate a range of ideas e.g. 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? • Through talk, drawings and mock-ups, ask the children to develop and communicate their ideas. Information and communication technology could be used for symmetry and pattern ideas. Choose one idea to follow through. • Talk with the children about the stages in making before assembling quality products, applying the knowledge, understanding and skills learnt through the IEAs and FTs. • Evaluate ongoing work and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.		15. Related learning in other subjects • Science – use knowledge of properties of everyday materials to select appropriate ones for their products. • Spoken language – ask questions throughout the process to check understanding, develop vocabulary and build knowledge. Explain and articulate their ideas orally. • Art and design – use and develop drawing skills. • Mathematics – measurement using non-standard and standard units. • Computing – use technology purposefully to create and manipulate digital content.		19. Health and safety Pupils should be taught to work safely, using tools equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project. Toy safety
						20. Overall potential of project

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 2 Design Technology Autumn

Design, make and evaluate a glove puppet for myself to use for imaginary role-play.

We will be able to:

Make a hand puppet which is decorated using applique shapes. The puppet will follow a design of your choice and will be used in an imaginary role-play. You will use felt as the main material and practice your hand stitching using embroidery thread.

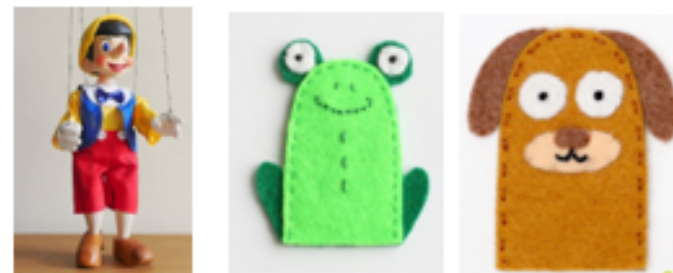
Crucial Knowledge:

- Puppets were invented 3000 years ago in Egypt. They were made of clay.
- Puppets are used in theatrical performances, they need strings or hands to make them move. They are used to tell a story.
- Punch and Judy is a favourite puppet show, traditionally seen at the seaside.
- There are lots of different types of puppets including, hand, sock, stick, finger and marionette.



Vocabulary:

- Puppet - A moveable model of a person or animal that is moved by either strings controlled from above or a hand inside.
- Puppeteer - the person who controls the puppet.
- Hand puppet - a puppet which is moved by using a hand.
- Finger puppet - a puppet which is moved by using fingers.
- Marionette puppet - a puppet which is moved by using strings from above.
- Felt - a type of material made from different fibres such as wool and polyester, which can be cut and shaped easily.
- Running stitch - a type of stitching used to join fabric.
- Template - a paper model used to produce a neat finish.



1. Year Groups Years 1/2	2. Aspect of D&T Food Focus Preparing fruit and vegetables	4. What could children design, make and evaluate? fruit salads fruit yogurt fruit drinks fruit jelly fruit smoothies vegetable salads fruit and vegetable kebabs Sandwich and wraps	5. Intended users themselves parents siblings grandparents friends peers at school younger/older children visitors family	6. Purpose of products picnic celebration party school event sports day pleasure café corner other – specify	16. Possible resources range of fresh fruit and vegetables chopping boards, knives, peelers, graters, skewers, juicers, spoons, jugs, plates, bowls, aprons, plastic table covers, hand washing and washing-up facilities yogurt making machine or blender, if appropriate	17. 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 fresh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Healthy Eating Festivals and Celebrations Teddy Bear Picnic Food and Farming Ourselves Senses Growing Food safety Packaging and environment	8. Possible contexts home school gardens playgrounds local community culture industry other – specify	9. Project title Design, make and evaluate a healthy wrap/sandwich for me and my family to share at a picnic together.	11. Related learning in other subjects • Science – understand that plants have leaves, stems, roots, flowers and fruits; understand the importance of growing plants and how seasons affect growth. • Spoken language – children develop and use a sensory vocabulary. • Writing – develop descriptive writing based on first-hand experience of tasting fruit and vegetables. • Mathematics – carry out a simple survey to find out which are the favourite fruits/vegetables; construct and interpret the information in e.g. pictograms and bar graphs.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
3. Key learning in design and technology 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. 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 <i>The eatwell plate</i> . • Know and use technical and sensory vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) • Children examine a range of fruit/vegetables. Use questions to develop children's understanding e.g. <i>What is this called? Who has eaten this fruit/vegetable before? Where is it grown? When can it be harvested? What are its taste, smell, texture and appearance? What will it look like if we peel it or cut it in half? What are the different parts called?</i> • Provide opportunities for children to handle, smell and taste fruit and vegetables in order to describe them through talking and drawing, e.g. <i>What words can we use to describe the shape, colour, feel, taste?</i> • Evaluate existing products to determine what the children like best; provide opportunities for the children to investigate preferences of their intended users/suitability for intended purposes e.g. <i>What do you prefer and why? What might we want to include in our product to meet our user's preferences? Which fruit/vegetables might be the best for our product to match the occasion/purpose?</i>	12. Focused Tasks (FTs) • Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. <i>What should we do before we work with food? Why is following instructions important?</i> • Demonstrate how to use simple utensils and provide opportunities for the children to practise food processing skills such as washing, grating, peeling, slicing, squeezing e.g. <i>Do we eat the whole fruit? Why or why not? Which parts do we eat? What might we have to do before eating this? Why do we cut, grate, peel and slice in this way? Discuss different effects achieved by different processes.</i> • Discuss healthy eating advice, including eating more fruit and vegetables; using <i>The eatwell plate</i> model talk about the importance of fruit and vegetables in our balanced diet e.g. <i>Why is it good to eat fruit and vegetables? How many pieces of fruit/vegetables do you eat per day? Why is it important to wash fruit/vegetables before we eat them?</i>	13. Related learning in other subjects • Spoken language – ask questions to check understanding; use the correct terminology for equipment and food processes. • Writing – instructions on how to use one of the utensils; how to prepare e.g. <i>a</i> fruit for eating. • Science – talk about a balanced diet, different types of food and hygiene.	19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.	
		14. Design, Make and Evaluate Assignment (DMEA) • Set a context for designing and making which is authentic and meaningful. • Discuss with the children the 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 development and evaluation of children's products e.g. <i>Who/what is the product for? What will make our product unique/different? How will we know that we designed and made a successful product?</i> • Use talk and drawings when planning for a product; ask the children to develop, model and communicate their ideas e.g. <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i> • Talk to the children about the main stages in making, considering appropriate utensils and food processes they learnt about through IEAs and FTs. • 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.	15. Related learning in other subjects • Spoken language – ask questions to develop and check understanding, develop technical and sensory vocabulary and build knowledge. • Art and design – use and develop drawing skills. • Writing – children write a simple account about how they made their food product. • Computing – use digital photographs to help order the main stages of making and support children's writing.	20. Overall potential of project 		

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 2 Design Technology Spring –

Design, make and evaluate a healthy wrap/sandwich for my family and I to share at a picnic together.

We will be able to:

Create a sandwich/wrap for a family to share at a picnic. The sandwich will be made following health and safety guidelines. The Eatwell plate will help us to decide which ingredients to use to make our sandwich/wrap as healthy as possible.

Crucial Knowledge:

- Eating a balanced diet (a variety of foods) is important for our health.
- The five major food groups (nutrients) are carbohydrates, proteins, fats, vitamins and minerals. The body needs all five nutrients to stay healthy.
- Food is fuel for our body, it provides energy and all the requirements for growth and repair.
- To cut ingredients safely we need to hold the ingredient using the bridge or claw technique.

Vocabulary:

- Eatwell plate, a picture which shows us what types of food we should be eating.
- The bridge and claw technique, these are ways to hold ingredients in order to cut or slice them safely.
- Health, feeling well.
- Nutrients, these are found in foods. The body needs these to survive.
- Personal hygiene, this includes washing our hands, so that we keep the food we are preparing, safe to eat.
- Personal safety, preparing food safely without injuring ourselves.



Year 3

1. Year Groups Years 3/4	2. Year Groups Textiles Focus 2-D shape to 3-D product	4. What could children design, make and evaluate? purse/wallet soft toy/mascot apron fashion accessory beach bag shoe bag pencil case story sack other – specify	5. Intended users themselves friends family teachers children parents other adults other – specify	6. Purpose of products entertainment hobbies protection celebration pleasure carrying things other – specify	16. Possible resources collection of textile products linked to the chosen product to be made selection of fabrics and fastenings left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape items to use for finishing e.g. fabric paints, threads, appliqué pieces, paints for printing, thin paint brushes	17. 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 pieces
2. STEM Existing Knowledge Maths – Science – Computing –	3. Key learning in design and technology 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. Designing • Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific users. • Produce annotated sketches, prototypes, final product sketches and pattern pieces. Making • Plan the main stages of making. • Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. • Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern. Evaluating • Investigate a range of 3-D textile products relevant to the project. • Test their product against the original design criteria and with the intended user. • Take into account others' views. • Understand how a key event/individual has influenced the development of the chosen product and/or fabric. Technical knowledge and understanding • Know how to strengthen, stiffen and reinforce existing fabrics. • Understand how to securely join two pieces of fabric together. • Understand the need for patterns and seam allowances. • Know and use technical vocabulary relevant to the project.	7. Links to topics and themes Celebrations Festivals Make Do and Mend Holidays Sustainability Containers other – specify	8. Possible contexts school home leisure enterprise sustainability outdoor environment other – specify	9. Project title Design, make and evaluate a container to keep your snack money secure.	11. Related learning in other subjects • Science – physical properties of fabrics. • Spoken language – asking and answering questions to develop understanding. Through discussion, participate actively initiating and responding to comments. • Mathematics – nets of shapes and accurate measurements mm/cm. • History – investigating textiles and textile products from age being studied.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
		10. Investigative and Evaluative Activities (IEAs) • Children investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to the product they will design, make and evaluate. Think about products from the past and what changes have been made in textile production and products e.g. the invention of zips and Velcro. • Give children the opportunity to disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances. • Use questioning to develop understanding e.g. <i>What is its purpose? Which one is most suited to its purpose? What properties/characteristics does the fabric have? Why has this fabric been chosen? How has the fabric been joined together? How effective are its fastenings? How has it been decorated? Does its decoration have a purpose? What would the 2-D pattern piece look like? What are its measurements? How might you change the product?</i>			13. Related learning in other subjects • Computing – opportunity to create pattern pieces using a computer program. • Mathematics – nets of shapes and accurate measurement mm/cm. • Science – identify and compare the suitability of a variety of fabrics for particular uses . • Art and design – investigating visual and tactile qualities of fabrics and using colour and pattern appropriately. • Spoken language – develop technical vocabulary. Give well-structured descriptions of e.g. finishing techniques.	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.
		12. Focused Tasks (FTs) • Demonstrate a range of stitching techniques and allow children to practise sewing two small pieces of fabric together. • Allow children to use a textile product they have taken apart to create a paper pattern using 2-D shapes. • Provide a range of fabrics – children to consider whether fabrics are suitable for the chosen purpose and user. The fabrics also can be used for demonstrating and testing out a range of decorative finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing. • Use questioning to develop understanding e.g. <i>Which joining technique makes the strongest seam? Why? Which stitch is appropriate for the purpose? Which joining techniques are suitable for the fabric and purpose? How can you stiffen your fabric? What is the purpose of the fastenings? Which one is most suited to the purpose and user? What decorative techniques have been used? What effect do they have?</i>			15. Related learning in other subjects • Art and design – using a range of tools and decorative techniques. Develop sketching techniques. • Computing – using software to produce pattern pieces and possible use for decorative techniques. • Mathematics – accurate measurements mm/cm. • Spoken language – consideration and evaluation of others' viewpoint. • Writing – written evaluation of their product, organising it under e.g. headings, subheadings.	20. Overall potential of project
		14. Design, Make and Evaluate Assignment (DMEA) • Children to create a design brief, supported by the teacher, set within a context which is authentic and meaningful. Discuss the intended user, purpose and appeal of their product. Create a set of design criteria. • Ask children to sketch and annotate a range of possible ideas, constantly encouraging creative thinking. Produce mock-ups and prototypes of their chosen product. • Plan the main stages of making e.g. using a flowchart or storyboard. • Children to assemble their product using their existing knowledge, skills and understanding from IEAs and FTs. Encourage children to think about the aesthetics and quality finish of their product. • Evaluate as the process is undertaken and the final product in relation to the design brief and criteria. The product should be tested by the intended user and for its purpose and others' views sought to help with identifying possible improvements.				

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Spring 2 Year 3 Design Technology

Design, make and evaluate a container to keep your pocket money secure.

The 3D product will be created from a 2D design.

We will be able to:

- Know and use technical vocabulary relevant to the project.
- Create a functional and unique pocket money container.
- Understand how to securely join two pieces of fabric together.

Crucial Technical Knowledge:

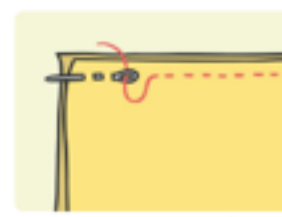
- Running stitch is a stitch used to attach pieces or as a decorative stitch.
- Whipstitch is a long slanting stitch used at the edge of the fabric.
- Know how to strengthen, stiffen and reinforce existing fabrics.
- Understand how to securely join two pieces of fabric together.
- Understand the need for patterns and seam allowances.
- Know and use technical vocabulary relevant to the project.

Vocabulary:

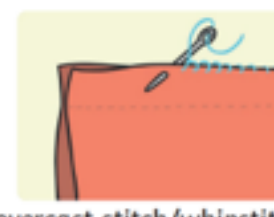
- Felt – a type of material made from different fibres such as wool and polyester, which can be cut and shaped easily.
- Template – a paper model used to produce a neat finish.
- Fastening – objects used to hold garments together.
- Stitch – loops of thread to join the edges of fabric together.
- Seam – is the join where two or more layers of fabric are held together with stitches.
- Seam allowance – the area between the fabric edge and the stitching line.
- Functional – to meet the requirements for the purpose.



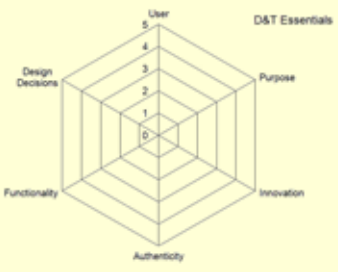
Back stitch



running stitch



overcast stitch/whipstitch

1. Year Groups Years 3/4	2. Aspect of D&T Food Focus Healthy and varied diet	4. What could children design, make and evaluate? sandwiches wraps rolls pitta pockets buns rice cakes toasties snack bar salad snacks Pizza	5. Intended users themselves older children younger children parents grandparents friends family visitors other – specify	6. Purpose of products celebration picnic lunch boxes sports day religious festival off-site visits healthy living other – specify	16. Possible resources information about foods from around the world, basic recipes range of relevant example foods to taste and evaluate suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons – various sizes, parchment paper, plastic film	17. 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
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Stories Picnics Healthy Eating School Fair Religious Festival Eco-Fair/Green Days Cultural Focus day other – specify	8. Possible contexts home school off-site educational visits leisure culture enterprise industry wider environment health packaging/environment	9. Project title Design, make and evaluate a pizza for my family and I to share at a family party.	11. Related learning in other subjects Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically. Spoken language – developing relevant vocabulary e.g. sensory descriptors. Ask relevant questions to extend their knowledge. Science – using and developing skills of observing and questioning. Humans get nutrition from what they eat. Discuss changes of state if heat is used.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
3. Key learning in design and technology Prior learning - Know some ways to prepare ingredients safely and hygienically. - Have some basic knowledge and understanding about healthy eating and the eatwell plate. - Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing - Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. - Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Making - Plan the main stages of a recipe, listing ingredients, utensils and equipment. - Select and use appropriate utensils and equipment to prepare and combine ingredients. - Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Evaluating - Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. - Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding - Know how to use appropriate equipment and utensils to prepare and combine food. - Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. - Know and use relevant technical and sensory vocabulary appropriately.		10. Investigative and Evaluative Activities (IEAs) Children investigate a range of food products e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using the eatwell plate e.g. What ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g. nutrients, water and fibre? - Carry out sensory evaluations on the contents of the food from e.g. a variety of bought food products such as a range of wraps or sandwiches. Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance e.g. How do the sensory characteristics affect your liking for the food? Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet. - Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed?	13. Related learning in other subjects Mathematics – mass kg/g. Spoken language – developing relevant technical vocabulary e.g. names of utensils and techniques. Ask relevant questions to extend their knowledge.	19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.		
		12. Focused Tasks (FTs) Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. - Food preparation and cooking techniques could be practised by making a food product using an existing recipe. Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important?	15. Related learning in other subjects Mathematics – mass kg/g. Art and Design – using and developing drawing skills. Writing – new vocabulary. Use non-fiction texts such as description, explanation and instructions e.g. recipes. Organise their work using e.g. headings, subheadings. Spoken language – consider and evaluate different viewpoints. Use discussion to develop understanding through exploring ideas.	20. Overall potential of project 		
		14. Design, Make and Evaluate Assignment (DMEA) - Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for. - Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet e.g. What do you need to consider to make it part of a balanced diet? How do we select the ingredients? How could we make it appealing to eat? - Ask children to generate a range of ideas encouraging realistic responses. - Using discussion, annotated sketches and information and communication technology if appropriate, ask the children to develop and communicate their ideas. - Ask children to consider the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need. - Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed. Consider what others think of the product when considering how the work might be improved.				

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 3 Design Technology Autumn

Design, make and evaluate a pizza for my family and I to share at a family party.

We will be able to:

Create a pizza for a family to share at a picnic. The pizza will be made following strict health and safety guidelines. We will also look at ingredients and compare them to find out which food ingredients we can use to make our pizza as healthy as possible.

Crucial Knowledge:

- The five major food groups (nutrients) are carbohydrates, proteins, fats, vitamins and minerals.
- Food is fuel for our body, it provides energy and all the requirements for growth and repair.
- It is possible to make a food item healthier by looking at the ingredients and finding out what amounts of fat, sugar and salt they contain.
- When preparing food, it is important to consider food safety, that means. How to keep food safe to eat.

Vocabulary:

- Balanced diet, eating a variety of foods in the correct amounts.
- Eatwell plate, a picture which shows us what types of food we should be eating.
- Health, feeling well.
- Food safety, keeping food safe to eat.
- Nutrients, these are found in foods. The body needs these to survive.
- Special diets, diets/foods that have been changed to make them suitable for people with special needs such as 'lactose or gluten free.'
- Personal safety, preparing food safely without injuring ourselves.



4 STEPS TO FOOD SAFETY



Nutrition

per 100g pizza Typical Values (cooked as per instructions)



Year Groups Years 3/4	2. Aspect of D&T Structures Focus Shell structures	4. What could children design, make and evaluate? gift boxes/containers desk tidy disposable/recyclable lunchboxes packaging cool boxes party boxes keep safe boxes mystery boxes Instrument	5. Intended users themselves siblings parents relatives friends younger/older children party guests neighbours other – specify	6. Purpose of products celebration storage packaging protection marketing presentation display postage performance	16. Possible resources collection of shell structures for different purposes and users card, squared paper, coloured paper, adhesive tape, masking tape, PVA glue, glue spreaders, acetate sheet, pencils, felt-tip pens, rulers, right/left handed scissors computer with computer-aided design (CAD) software, printer	17. Key vocabulary <u>shell structure</u> – 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, <u>decision</u> – evaluating, design brief design criteria, innovative, prototype
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Shape and Space Going Green Festivals Celebrations Healthy Eating Our School Toys and Games Recycle/reuse	8. Possible contexts home school culture enterprise local community wider environment other – specify	9. Project title Design, make and evaluate a musical instrument (shell structure) that you can use as part of a class performance.	11. Related learning in other subjects • Science – discuss the properties and suitability of materials for particular purposes. • Mathematics – compare and sort common 2-D and 3-D shapes in everyday objects. Recognise 3-D shapes in different orientations and describe them. • Spoken language – ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.	
3. Key learning in design and technology 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. Designing • Generate realistic ideas and design criteria collaboratively through discussion, focusing on the needs of the user and purpose of the product. • Develop ideas through the analysis of existing products and use annotated sketches and prototypes to model and communicate ideas. Making • Order the main stages of making. • Select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy. • Explain their choice of materials according to functional properties and aesthetic qualities. • Use finishing techniques suitable for the product they are creating. Evaluating • Investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used. • Test and evaluate their own products against design criteria and the intended user and purpose. Technical knowledge and understanding • Develop and use knowledge of how to construct strong, stiff shell structures. • Develop and use knowledge of nets of cubes and cuboids and, where appropriate, more complex 3D shapes. • Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) • Children investigate a collection of different shell structures including packaging. Use questions to develop children's understanding e.g. <i>What is the purpose of the shell structure – protecting, containing, presenting? What material is it made from? How has it been constructed? Are the materials recyclable or reusable? How has it been stiffened i.e. folded, corrugated, ribbed, laminated? What size/shape/colour is it? What information does it show and why? How attractive is the design?</i> • Children take a small package apart identifying and discussing parts of a net including the tabs e.g. <i>How are different faces of the package arranged? How are the tabs used to join the 'free' edges of the net?</i> • Evaluate existing products to determine which designs children think are the most effective. Provide opportunities for the children to judge the suitability of the shell structures for their intended users and purposes. Discuss graphics including colours/impact of style/logo/size of font e.g. <i>What do you prefer and why? What style of graphics and lettering might we want to include in our product to meet users' preferences and its intended purpose? Which packaging might be the best for ...?</i>	12. Focused Tasks (FTs) • Children use kit parts with flat faces to construct nets. Practise making nets out of card, joining flat faces with masking tape to create 3-D shapes. Experiment with assembling in nets in numerous ways. • Demonstrate skills and techniques of scoring, cutting out and assembling using pre-drawn nets. Then allow children to practise by constructing a simple box. Show how a window could be cut out and acetate sheet added. • Demonstrate how to use different ways of stiffening and strengthening their shell structures e.g. folding and shaping, corrugating, ribbing, laminating. Provide opportunities for the children to practise these and to carry out tests to find out where their structures might need to be strengthened or stiffened. • Children discuss and explore the graphics techniques and media that could be used to achieve the desired appearance of their products. • Practise using computer-aided design (CAD) software to design the net, text and graphics for their products according to purposes.	13. Related learning in other subjects • Mathematics – use a ruler to measure to the nearest cm, half cm or mm. Draw 2-D shapes and make 3-D shapes using modelling materials. • Computing – design and create digital content on screen, creating nets for their products and combining text with graphics.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify	
		14. Design, Make and Evaluate Assignment (DMEA) • Develop a design brief with the children within a context which is authentic and meaningful. • Discuss with the children the uses and purposes of their shell structures e.g. <i>What does the product need to do? Who is it aimed at? How will the purpose and user affect your design decisions? Agree on design criteria that can be used to guide the development and evaluation of children's products e.g. How will we know that we have designed and made successful products?</i> • Ask the children to use annotated sketches and prototypes to develop, model and communicate their ideas for the product e.g. <i>What will you need to include in your design? How can you improve it? What materials will you use? How will you make sure your product works well and has the right appearance?</i> • Ask children to identify the main stages of making and the appropriate tools and skills they learnt through focused tasks. Encourage the children to work with accuracy, using computer-aided design (CAD) where appropriate. • Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.	15. Related learning in other subjects • Spoken language – ask relevant questions to extend knowledge and understanding. Build technical vocabulary. • Art and design – use and develop drawing skills. • Writing – write for real purposes and audiences. • Computing – design and create digital content on screen using computer-aided design (CAD) software, creating nets for their products and combining graphics with text.	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.		
		20. Overall potential of project				

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Summer Year 3 Design Technology

Design, make and evaluate a musical instrument (shell structure) that you can use as part of a class performance.

We will be able to:

Design, make and evaluate a musical instrument (shell structure) that you can use as part of a class performance.

Crucial Technical Knowledge:

- A shell structure is a hollow structure made from a thin outer layer. Many buildings use a shell structure including the O2 and Shard.
- Card Shell structures are stronger and more stable if made corrugated, ribbed or laminated card
- Shell structures can be made from various materials such as card, fabric metal and plastic
- A 2D net can be used to make a 3D object
- You can make a prototype of a shell structure using paper to practise joining techniques and strengthening solutions (laminating, ribbing, corrugating)

Vocabulary:

Cuboid - A solid 3D body with rectangular sides

Edge - Where two surfaces meet at an angle

Face - A flat surface of a geometric shape

Net - A flat opened out shape of an object, such as a flattened box

Shell structure - A hollow structure with a thin outer covering

Laminating - gluing together several layers of material

Corrugated - A zig-zag piece of card between two layers of card to give strength

Scoring - cutting or marking a line into sheet material to make it easier to fold.

Prism: A prism is a 3D shape with flat sides. The 2 ends are an equal shape and size. The cross-section is identical.

Prototype - A Prototype is a smaller or scaled down model of the object to be made.

Oscar Niemeyer



Jorn Utzon



Renzo Piano



Types of Prisms



Square Prism



Triangular Prism



Pentagonal Prism



Year 4

1. Year Groups Years 4	2. Aspect of D&T Food Focus Healthy and varied diet	4. What could children design, make and evaluate? sandwiches <u>wraps</u> rolls pitta pockets blinis rice cakes toasties snack bar salad snacks <u>healthy muffin</u>	5. Intended users <u>themselves</u> older children younger children parents grandparents friends <u>family</u> visitors	6. Purpose of products celebration picnic lunch boxes sports day religious festival off-site visits healthy living <u>breakfast</u>	16. Possible resources information about foods from around the world, <u>basic recipes</u> range of relevant example foods to taste and evaluate <u>suitable equipment and utensils</u> such as: <u>knives, chopping board</u> , weighing scales, measuring jugs, bowls, baking trays, spoons – various sizes, parchment paper, plastic film	17. Key vocabulary name of products, names of equipment, utensils, techniques and ingredients <u>texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savoury</u> hygienic, edible, grown, <u>reared, caught</u> , frozen, tinned, processed, seasonal, harvested healthy/varied diet planning, design criteria, purpose, <u>user-annotated</u> sketch, sensory evaluations
2. STEM Existing Knowledge Maths – weighing, addition Science – digestion, healthy eating, changes of state Computing - design		7. Links to topics and themes Stories Picnics <u>Healthy Eating</u> School Fair Religious Festival Eco-Fair/Green Days Cultural <u>Focus-day</u> <u>Special dietary needs</u>	8. Possible contexts <u>home</u> school off-site educational visits leisure culture enterprise industry wider environment health	9. Project title Design, make and evaluate a healthy muffin for themselves and family for breakfast.	11. Related learning in other subjects Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically. Spoken language – developing relevant vocabulary e.g. sensory descriptors. Ask relevant questions to extend their knowledge. Science – using and developing skills of observing and questioning. Humans get nutrition from what they eat. Discuss changes of state if heat is used.	18. Key competencies <u>problem-solving</u> teamwork negotiation <u>consumer awareness</u> organisation motivation persuasion leadership perseverance <u>Modifying a recipe</u>
3. Key learning in design and technology Prior learning - Know some ways to prepare ingredients safely and hygienically. - Have some basic knowledge and understanding about healthy eating and <u>the eatwell plate</u>. - Have used some equipment and utensils and prepared and combined ingredients to make a product. Designing - Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for an appealing product for a particular user and purpose. - Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas. Making - Plan the main stages of a recipe, listing ingredients, utensils and equipment. - Select and use appropriate utensils and equipment to prepare and combine ingredients. - Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics. Evaluating - Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs. - Evaluate the ongoing work and the final product with reference to the design criteria and the views of others. Technical knowledge and understanding - Know how to use appropriate equipment and utensils to prepare and combine food. - Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught. - Know and use relevant technical and sensory vocabulary appropriately.		10. Investigative and Evaluative Activities (IEAs) - Children <u>investigate a range of food products</u> e.g. the content of their lunchboxes over a week, a selection of foods provided for them, food from a visit to a local shop. Link to the principles of a varied and healthy diet using <u>the eatwell plate</u> e.g. What ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g. nutrients, water and more? - Carry out <u>sensory evaluations</u> on the contents of the food from e.g. a variety of bought food products such as a range of wraps or sandwiches. Record results, for example using a table. Use appropriate words to describe the taste/smell/texture/appearance e.g. How do the sensory characteristics affect your liking for the food? - Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet. - Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed?	12. Focused Tasks (FTs) - Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking. - Food preparation and cooking techniques could be practised by making a food product using an <u>existing recipe</u>. - Discuss basic food hygiene practices when handling food including the importance of following instructions to control risk e.g. What should we do before we work with food? Why is following instructions important?	13. Related learning in other subjects Mathematics – mass kg/g. Spoken language – developing relevant technical vocabulary e.g. names of utensils and techniques. Ask relevant questions to extend their knowledge.	19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.	
		14. Design, Make and Evaluate Assignment (DMEA) - Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for. - Develop and agree on design criteria with the children within a context that is authentic and meaningful. This can include criteria relating to healthy eating and a varied diet e.g. What do you need to consider to make it part of a balanced diet? How do we select the ingredients? How could we make it appealing to eat? - Ask children to generate a range of ideas encouraging realistic responses. - Using discussion, annotated sketches and information and communication technology if appropriate, ask the children to develop and communicate their ideas. - Ask children to consider the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need. - Evaluate as the assignment proceeds and the final product against the intended purpose and user, reflecting on the design criteria previously agreed. Consider what others think of the product when considering how the work might be improved.	15. Related learning in other subjects Mathematics – mass kg/g. Art and Design – using and developing drawing skills. Writing – new vocabulary. Use non-fiction texts such as description, explanation and instructions e.g. recipes. Organise their work using e.g. headings, subheadings. Spoken language – consider and evaluate different viewpoints. Use discussion to develop understanding through exploring ideas.	20. Overall potential of project 		

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 4 Design Technology Autumn 2

Design, make and evaluate a healthy muffin for myself and my family for breakfast. Consider how the muffin recipe could be modified to suit a range of dietary needs.

We will be able to:

Make a healthy breakfast muffin using ingredients which consider the dietary needs of a range of individuals.

Crucial Knowledge:

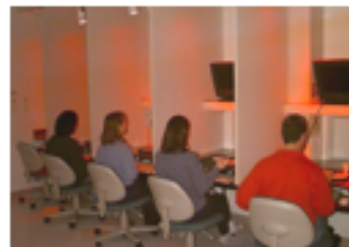
- Breakfast is thought to be the most important meal of the day, it provides the body with fuel to give the body energy.
- Breakfast products such as cereals contain carbohydrate which is a nutrient needed for energy.
- Food recipes can be changed or modified to meet special dietary needs. For example, by using low fat spread instead of butter, you can make a food product healthier.
- Some people choose food ingredients for a specific reason, for example, they may buy free range eggs because free range hens have been well looked after.

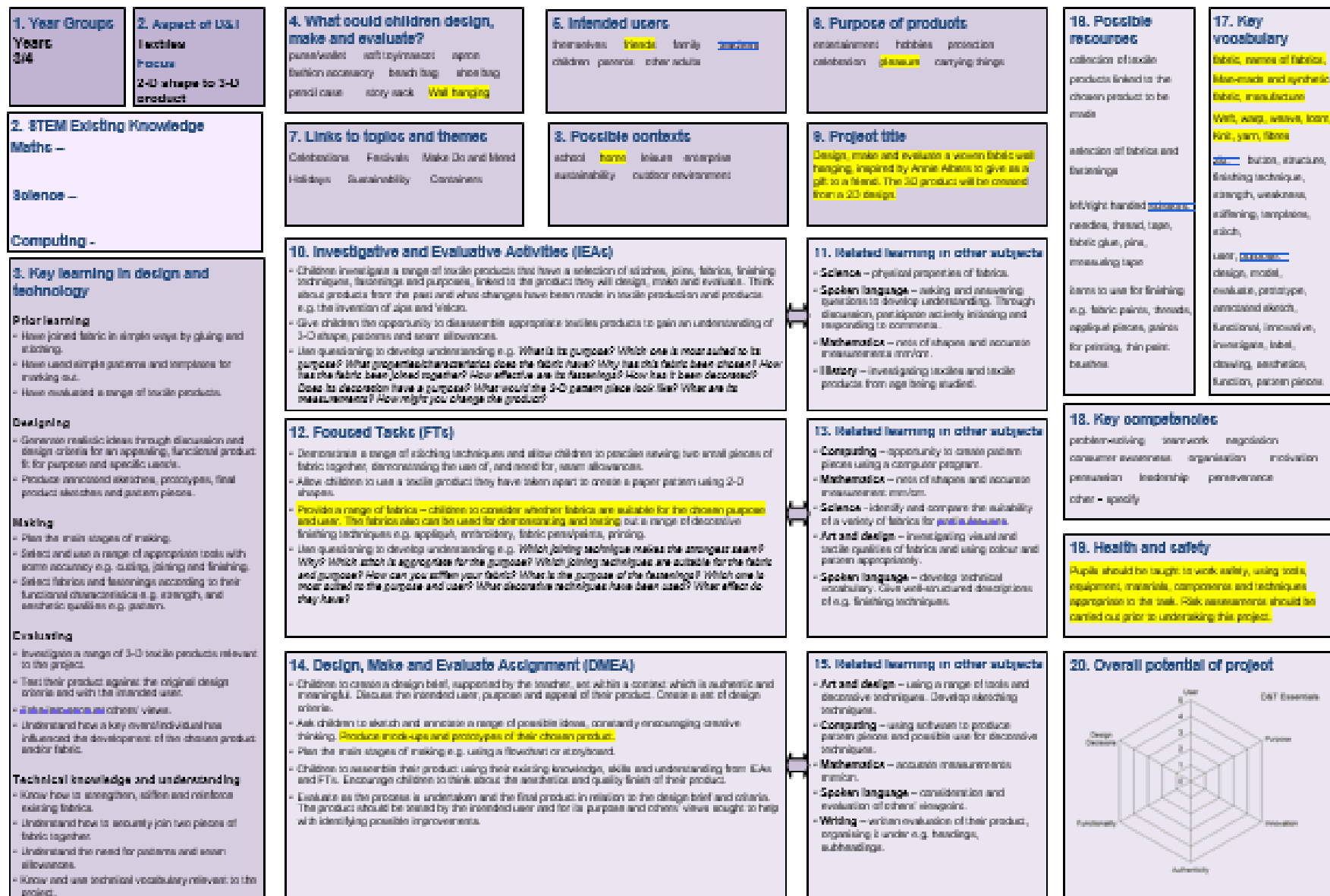
Vocabulary:

- Sensory Analysis – using our senses to test food and check the food product's characteristics.
- Aroma – a smell or fragrance.
- Texture – the mouthfeel of a food.
- Sweet – has a taste like that of honey or sugar.
- Savoury – food that is salty or spicy rather than sweet.
- Seasonal – fresh food that is ready to eat during its preferred season.
- Carbohydrate – a nutrient which the body needs for energy. It can provide long lasting energy or a quick burst.
- Modified recipe – a recipe that has been changed for a particular reason.



Standard recipe	Modified recipe
150g white self-raising flour	150g wholemeal flour
75g rolled oats	
80g sugar	40g sugar
50g margarine	50g low fat spread
1 egg	
100ml whole full fat milk	100ml semi skimmed milk
3 dessert spoons of seasonal fruit	4 dessert spoons of seasonal fruit





User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Spring Year 4 Design Technology

Design, make and evaluate a woven fabric wall hanging, inspired by Annie Albers to give as a gift to a friend.

The 3D product will be created from a 2D design.

We will be able to:

Know and use technical vocabulary relevant to the project.

Taking inspiration from Anni Albers, weave using wool to create a patterned wall hanging.

Crucial Technical Knowledge:

Weaving is used to create a variety of products such as clothing, cushions, baskets, carpets and decorative items.

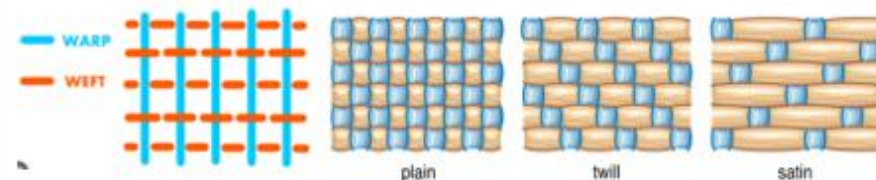
Weaving can be done by hand or by using a machine.

There are many different ways to weave to create different patterns. Plain, twill and satin are three popular ways.

Textiles can be made using computer aided design (CAD) and computer aided manufacture. (CAM)

Anni Albers 1899-1994

Known for her pioneering graphic wall hangings, weavings, and designs, **Anni Albers** is considered one of the most important abstract artist, designer and educator. She studied weaving in 1922 at the famous Bauhaus school which is famous for its approach to design and function. Thinking about function means thinking about what something does, the job it has to do.



Vocabulary:

Weaving - a process used to create fabric from interlacing threads.

Warp - the vertical threads on which weaving is done.

Weft - the horizontal threads on which weaving is done.

Wall hanging - a piece of work suitable for displaying on a wall.

Yarn - small lengths of natural or man-made fibre which are spun and twisted together to make strong lengths which can be made into fabric.

Fibres - are single threads which can be natural from plants and animals such as wool fibres from sheep or man-made such as polyester. They can be used to make yarn and fabric.

Knit - Making a fabric by connecting loops or stitches from a long thread.

Loom - a frame on which weaving is done.



Year Groups Year 3/4	2. Aspect of D&T Electrical systems Focus Simple circuits and switches	4. What could children design, make and evaluate? siren for a toy vehicle reading light noise-making toy nightlight illuminated sign torches table lamp lighting for display hands-free head lamp buzzer for school office Torch hand-held	5. Intended users themselves younger children older children teenagers parents grandparents friends school general public family	6. Purpose of products safety and security hobbies and interests utility pleasure advertising gift energy saving for sale other – specify	16. Possible resources handling collection of battery-powered electrical products switches including toggle, push-to-make and push- to-break aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials and media buzzers, bulbs, bulb holders, batteries, battery holders, wire, automatic wire strippers suitable control program with interface box or standalone control box right/left handed scissors, PVA glue, cutting mats	17. 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
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Homes Travel and Holidays Cities Emergency Vehicles School Business Enterprise Light and Dark other – specify	8. Possible contexts home school leisure culture enterprise environment sustainability local community other – specify	9. Project title Design, make and evaluate a torch for my family to use on a camping trip.		
3. Key learning in design and technology 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. Designing - Gather information about needs and <u>wants</u>, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups. - Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams. Making - Order the main stages of making. - Select from and use tools and equipment to cut, shape, join and finish with some accuracy. - Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities. Evaluating - Investigate and analyse a range of existing battery-powered products. - Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work. Technical knowledge and understanding - Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. - Apply their understanding of computing to program and control their products. - Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) - Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available e.g. <u>Where and why they are used?</u> <u>How does the product work?</u> <u>What are its key features and components?</u> <u>How does the switch work?</u> <u>Is the product manually controlled or controlled by a computer?</u> <u>What materials have been used and why?</u> <u>How is it suited to its intended user and purpose?</u> - Ask children to investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch. Let the children use them in simple circuits e.g. <u>How might different types of switches be useful in different types of products?</u> - Remind children about the dangers of mains electricity.		11. Related learning in other subjects Science – know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches. Spoken language – participate in discussion and evaluation of battery-powered products. Ask relevant questions to extend knowledge and understanding. Build their technical vocabulary.		
		12. Focused Tasks (FTs) - Recap with the children how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers. - Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise. - Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers. - Ask the children to make a variety of switches by using simple classroom materials e.g. <u>card, corrugated plastic, aluminium foil, paper fasteners and paper clips</u>. Encourage children to make switches that operate in different ways e.g. when you press them, when you turn them, when you push them from side to side. Ask the children to test their switches in a simple series circuit. - Teach children how to avoid making short circuits.		13. Related learning in other subjects Science – know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches. Computing – design, write and debug programs that accomplish specific goals, including controlling physical systems. Spoken language – asking questions to check understanding, develop technical vocabulary and build knowledge.	18. Key competencies <u>problem-solving</u> teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.
		14. Design, Make and Evaluate Assignment (DMEA) - Develop a design brief with the children within a context which is authentic and meaningful. - Discuss with children the purpose of the battery-powered products that they will be designing and making and who they will be for. Ask the children to generate a range of ideas, encouraging realistic responses. Agree on design criteria that can be used to guide the development and evaluation of the children's products, including safety features. - Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate their ideas. - Ask the children to consider the main stages in making and testing before assembling high quality products, drawing on the knowledge, understanding and skills learnt through IEAs and FTs. - Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.		15. Related learning in other subjects Spoken language – maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments. Develop understanding through speculating, hypothesising, imagining and exploring ideas. Science – know how to construct simple series circuits and have a basic understanding of conductors, insulators and open and closed switches. Computing – design, write and debug programs that accomplish specific goals, including controlling physical systems. Art and design – using and developing drawing skills.	20. Overall potential of project 	

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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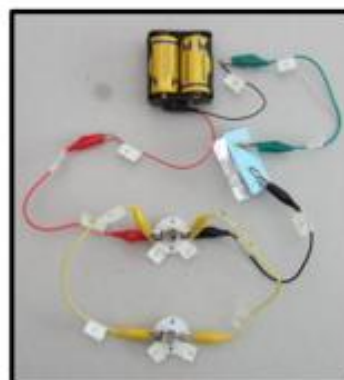


Year 4 Summer Design Technology

Design, make and evaluate a torch for my family to use on a camping trip.

We will be able to:

- Investigate and analyse a range of existing products
- Understand and use electrical systems in products
- Design a product to fit a set of specific user needs
- Select from and use a wider range of materials and components according to functional properties and aesthetics
- Know and use technical vocabulary relevant to the project



Vocabulary:

Conductor - A component that does not allow electricity or heat to pass through it.

Insulator - A component that prevents electricity, heat or cold to pass through it.

Switch - A component that joins or breaks an electrical circuit.

Component - A part or element of a machine needed to make it function.

Bulb - It gives out light when electricity passes through it.

Reflector - An object that causes light to bounce off of it in a particular direction—reflects.

Electrical circuit - A closed path around which electricity can travel.

Input - To enter information or commands.

Output - What is produced as a result of an input.

Battery – Power/energy source.

Aesthetics – how a product looks.

Function – how a product works.

Crucial Technical Knowledge:

Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers. **These components can be programmed to switch on automatically by a timer or light sensor.**

Apply their understanding of computing to program and control their products.

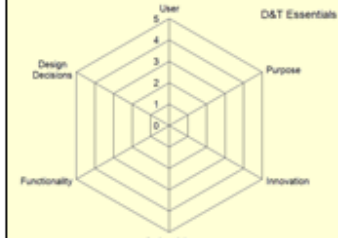
Electrical conductors are materials which electricity can pass through and electrical insulators are materials which electricity cannot pass through.

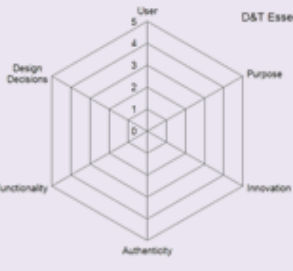
A battery contains stored electricity that can be used to power products.

An electrical circuit must be complete for electricity to flow and a switch can be used to complete and break an electrical circuit.

The features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.

Year 5

Year Groups Years 5/6	2. Aspect of D&T Food Focus Celebrating culture and seasonality	4. What could children design, make and evaluate? bread pizza savoury biscuits savoury scones savoury muffin cereal snack soup Sweet Biscuits	5. Intended users themselves younger children <u>parents</u> <u>older</u> people grandparents visitors people with special dietary needs consumers from a variety of cultures Children	6. Purpose of products festival celebration special event for sale food for travel picnic visit other – specify	16. Possible resources Information about food from around the world video clips of foods in the context of where they come from,	17. Key vocabulary Seasonality, packaging, costing, scaling up, manufacture, preservation
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Festivals Cultures/Celebrating Diversity Celebrations Special Events Seasons Sustainability Food Our Local Community Fair Trade	8. Possible contexts home school leisure culture traditions enterprise healthy eating local environment/community sustainability wider environment global citizenship	9. Project title Design, make and evaluate some biscuits which contain a seasonal ingredient. The biscuits are to be sold to children at a charity fund raiser.	range of relevant examples of foods to taste and evaluate basic recipes suitable equipment and utensils to make and cook recipes such as: weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film	fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, <u>gluten</u> , dairy, allergy, intolerance, savoury,
3. Key learning in design and technology Prior learning - Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. - Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.			10. Investigative and Evaluative Activities (IEAs) - Children use first hand and secondary sources to carry out relevant research into existing products to include personal/cultural preferences, ensuring a healthy diet, meeting dietary needs and the availability of locally sourced/seasonal/organic ingredients. This could include a visit to a local bakery, farm, farm shop or supermarket e.g. What ingredients are sourced locally/in the UK/from overseas? What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product? - Children carry out sensory evaluations of a variety of existing food products and ingredients relating to the project. The ingredients could include those that could be added to a basic recipe such as herbs, spices, vegetables or cheese. These could be locally sourced, seasonal, Fair Trade or organic. Present results in e.g. tables/graphs/charts and by using evaluative writing. - Use a range of questions to support children's ability to evaluate food ingredients and products e.g. What ingredients help to make the product spicy/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product? Research key chefs and how they have promoted seasonality, local produce and healthy eating.	11. Related learning in other subjects Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically, handling and interpreting data. Costing and scaling up Spoken language – developing relevant vocabulary including sensory descriptors. Give well-structured explanations. Science – using and developing skills of observing, questioning, changing state of ingredients. Geography – distribution of natural resources i.e. food. Computing – use technology purposefully to retrieve digital content.		utensils, combine, <u>fold</u> , knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble creaming method design specification, innovative, research, evaluate, design brief
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 <u>ideas</u>, 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.			12. Focused Tasks (FTs) Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients. Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically. - Techniques could be practised following a basic recipe to prepare and cook a savoury food product. Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell. When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. Which shape is most appealing and why?	13. Related learning in other subjects Science – properties of materials and changes of state. Mathematics – measuring mass kg/g. Understand and use approximate equivalences between metric and imperial units. Spoken language – new technical vocabulary.		18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance
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.				15. Related learning in other subjects Mathematics – measurement of mass kg/g: understand and use approximate equivalence of metric and imperial units. Art and design – using and developing drawing skills. Spoken language – articulate and justify answers and opinions. Listen and respond to adults and peers. Writing – purpose of writing e.g. for planning and evaluation. Mathematics – measurement of mass kg/g. Science – recognise the impact of diet on the way their <u>bodies</u> function.		19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.
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.			14. Design, Make and Evaluate Assignment (DMEA) - Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to nutrition and healthy eating. - Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for. Ask children to generate a range of ideas encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children's product. - Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas. - Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs. Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.		20. Overall potential of project 	
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.						

1. Year Groups Years 5/6	2. Aspect of D&T Textiles Focus Combining different fabric shapes	4. What could children design, make and evaluate? tablet case mobile phone carrier shopping bag insulating bag hat/cap garden tool belt slippers sandals fabric advent calendar fabric door stop Soft toy	5. Intended users themselves younger children older children teenagers parents school grandparents teachers gardeners other – specify	6. Purpose of products celebration educational interests hobbies environmental lifestyle religious protection enjoyment	16. Possible resources existing textile products for investigation and deconstruction linked to their product wide selection of textiles including reclaimed and reusable fabrics, dipryl pins, needles, thread, measuring tape, left/right handed fabric scissors, pinking shears, iron, iron transfer paper, sewing machine range of fastenings, materials for insulating or strengthening e.g. bubble wrap, wadding, interfacing finishing materials e.g. sequins, buttons, fabric paints	17. Key vocabulary seam, seam allowance, wadding, reinforces, right side, wrong side, hem, template, pattern pieces Prototype/mock up name of textiles and fastenings used, pins , needles, thread, pinking shears, fastenings, iron transfer paper Component parts Blanket stitch design criteria, annotate, design decisions , functionality , innovation, authentic, user, purpose, evaluate, mock-up, prototype
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Clothing Hot and Cold Communication Festivals Celebrations Weather Sustainability Our School Environment Toy safety	8. Possible contexts home school leisure culture enterprise environment local community other – specify	9. Project title Design, make and evaluate a 3D soft toy with component parts, which will be safe to give to a child over the age of 3.	11. Related learning in other subjects • Spoken language – ask questions, formulate, articulate and justify answers, arguments and opinions. Consider and evaluate different viewpoints. • Science – work scientifically investigating properties of fabrics. Children plan different types of scientific enquiries to answer questions. • History – significant person/people in their locality linked to textiles and products e.g. William Morris, Amanda Wakeley.	
3. Key learning in design and technology Prior learning • Experience of basic stitching, joining textiles and finishing techniques. • Experience of making and using simple pattern pieces. 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.		10. Investigative and Evaluative Activities (IEAs) • Children investigate, analyse and evaluate a range of existing products which have been produced by combining fabric shapes. Investigate work by designers and their impact on fabrics and products. Use questions to develop children's understanding e.g. Is the product functional or decorative? Who would use this product? What is its purpose? What design decisions have been made? Do the textiles used match the intended purpose? What components have been used to enhance the appearance? To what extent is the design innovative? • Children investigate and analyse how existing products have been constructed. Children disassemble a product and evaluate what the fabric shapes look like, how the parts have been joined, how the product has been strengthened and stiffened, what fastenings have been used and why. • Children investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.		13. Related learning in other subjects • Mathematics – apply knowledge of how 2-D nets can be formed into 3-D shapes; apply skills of accurate measuring using standard units i.e. cm/mm. • Art and design – investigate methods of adding colour, pattern and texture on to textiles and how to make their own textiles through weaving or felt making. • Computing – children express themselves and develop ideas using a range of information and communication technology resources.	18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify	
Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. Technical knowledge and understanding • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.		12. Focused Tasks (FTs) • Develop skills of threading needles and joining textiles using a range of stitches. This activity must build upon children's earlier experiences of stitches e.g. improving appearance and consistency of stitches and introducing new stitches. If available, demonstrate and allow children to use sewing machines to join fabric with close adult supervision. • Develop skills of sewing textiles by joining right side together and making seams. Children should investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches. • Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D dipryl mock-up of a chosen product. Remind/teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a seam allowance and different cutting techniques. • Develop skills of computer-aided design (CAD) by using on-line pattern making software to generate pattern pieces. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.		14. Design, Make and Evaluate Assignment (DMEA) • Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. Children develop a simple design specification for their product. • Communicate ideas through detailed, annotated drawings from different perspectives and/or computer-aided design. Drawings should indicate design decisions made, the methods of strengthening, the type of fabrics to be used and the types of stitching that will be incorporated. • Produce step-by-step plans, lists of tools equipment, fabrics and components needed. Allocate tasks within a team if appropriate. • Make high quality products applying knowledge, understanding and skills from IEAs and FTs. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric. Children use a range of decorating techniques to ensure a well-finished final product that matches the intended user and purpose. • Evaluate both as the children proceed with their work and the final product in use, comparing the final product to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for intended user and purpose, considering others' opinions. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	
				15. Related learning in other subjects • Art and design – use and apply drawing skills. • Writing and computing – write and record a radio advert, making use of persuasive writing features, sound effects and music to promote the final product or event it is advertising. • Computing – children express themselves and develop ideas using a range of information and communication technology resources. • Spoken language – consider and evaluate others' viewpoints. Give a well-structured oral evaluation to include relevant technical vocabulary.	20. Overall potential of project 	

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 5 Design Technology Spring

Design, make and evaluate a 3D soft toy with component parts, which will be safe to give to a child over the age of 3.



We will be able to: Make a 3D soft toy with character features, using templates for accuracy and using blanket stitch to secure the sides.

Crucial Knowledge:

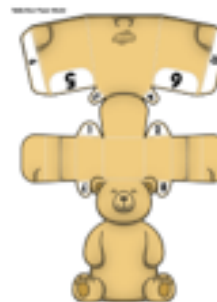
- A 3D textile product can be made from a combination of accurately made pattern pieces.
- Materials chosen need to be suitable for the user and suitable for the intended product
- Component parts can be used to give features or add detail.
- Hand stitching can be used to create features
- The sides of the toy need to be secure to ensure the filling does not escape
- The soft toy needs to be filled with wadding to give a 3D effect
- Due to small parts being used, the bag will not be suitable for small children under 3 years old.
- Blanket stitch and or whip stitch will be used to secure the sides of the toy

Vocabulary:

- Mock up – a quick 3-D model using cheaper materials to check for proportions and scale.
- Features – the sewn decorations which will give character to the toy
- Pattern or Template – a model of the item to be made. Usually made from paper, it is used to ensure the object to be made, 'works,' that it fits together neatly and accurately.
- Safety Hazard – a potential danger to safety. Toy safety is a legal requirement by all toy manufacturers.
- Tacking – used to secure fabric pieces before final stitching.



ROSPA
accidents don't have to happen



Year Groups Years 5/6	1. Aspect of D&T Structures Focus Frame structures	4. What could children design, make and evaluate? playground shelter market stall bus shelter tent <u>play-house</u> gazebo bird hide parasol park furniture adventure playground equipment kite <u>school gazebo</u>	5. Intended users themselves parents younger/older children <u>school community</u> walkers market trader gardeners mountaineers bird watchers other – specify	6. Purpose of products safety weather <u>protection</u> play pleasure meeting place business <u>recreation</u> other – specify	16. Possible resources products, photographs, web-based resources of existing frame structures <u>card, paper straws</u> , newspaper, <u>square sectioned wood</u> , masking tape, PVA glue pencils, rulers, <u>right/left handed scissors</u> , bench hooks, G-clamp, <u>junior hacksaws</u> , glass paper finishing media and materials	17. Key vocabulary <u>frame structure, stiffen, strengthen, reinforce, triangulation, stability, shape, join, temporary</u> , permanent design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Shape and Space Festivals Celebrations Our School Toys and Games Outdoors Our Local Community Weather Countries and Cultures <u>School fair</u>	8. Possible contexts home <u>school</u> gardens leisure culture local community wider environment other – specify	9. Project title Design, make and evaluate a gazebo model suitable to use (scaled up) at a school fair for adults and children. Consider ways a pulley system could be used to provide shade.		
3. Key learning in design and technology Prior learning - Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials. - Basic understanding of what structures are and how they can be made stronger, stiffer and more stable. Designing - Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources. - Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. - Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches. Making - Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. - Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. - Use finishing and decorative techniques suitable for the product they are designing and making. Evaluating - Investigate and evaluate a range of existing frame structures. - Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. - Research key events and individuals relevant to frame structures. Technical knowledge and understanding - Understand how to strengthen, stiffen and reinforce 3-D frameworks. - Know and use technical vocabulary relevant to the <u>context</u>.		10. Investigative and Evaluative Activities (IEAs) - Children investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas. Use photographs and web-based research to extend the range e.g. <u>How well does the frame structure meet users' needs and purposes? Why were materials chosen? What methods of construction have been used? How has the framework been strengthened, reinforced and stiffened? 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?</u> - Children could research key events and individuals related to their study of frame structures e.g. Stephen Sauvestre – a designer of the Eiffel Tower; Thomas Farnolls Pritchard – designer of the Iron Bridge. They could also learn about locally important design and technology activity related to their project. <u>Consider ways a pulley system could be used to provide shade.</u>	11. Related learning in other subjects Science – compare and group together everyday materials <u>on the basis of</u> their properties. Mathematics – identify 3-D shapes, including cubes and other cuboids, from 2-D representations. Spoken language – ask relevant questions, formulate and express opinions, give well-structured descriptions and explanations. Use relevant strategies to build their vocabulary. Computing – use technologies for research purposes and be discerning when evaluating digital content.	12. Focused Tasks (FTs) - Use a construction kit consisting of plastic strips and paper fasteners to build 2-D frameworks. Compare the strength of square frameworks with triangular frameworks. Ask the children to reinforce square frameworks using diagonals to help develop an understanding of using triangulation to add strength to a structure. - Demonstrate how paper tubes can be made from rolling sheets of newspaper diagonally around pieces of e.g. dowel. Ask children to use these tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids. <u>How could each of the frameworks be reinforced and strengthened?</u> <u>Demonstrate the accurate use of tools and equipment.</u> Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. - Demonstrate skills and techniques for accurately joining framework materials together e.g. <u>paper straws, square sectioned wood</u>. Ask children to practise these, mounting their joints onto card for future reference.	13. Related learning in other subjects Mathematics – recognise, describe and build simple 3-D shapes. Apply understanding and skill to carry out accurate measuring using standard units i.e. cm/mm. Spoken language – ask relevant questions, formulate and express opinions, give well-structured descriptions and explanations. Use strategies to build their vocabulary.	14. Design, Make and Evaluate Assignment (DMEA) - Discuss the brief of designing and making a small-scale frame structure e.g. <u>Who is the intended user and what is the purpose of the frame structure? Will it be permanent, or can it be easily dismantled? What materials will you use? How will it be joined? How will it be reinforced? How will it be finished?</u> Children should be encouraged to generate innovative ideas, drawing on their research. Ask children to develop a simple design specification to guide their thinking. <u>Children should produce a detailed, step-by-step plan, listing tools and materials.</u> <u>Children's sketches should be annotated with notes to help develop and communicate their ideas.</u> - Encourage children to model their ideas first using materials such as paper, card and paper straws e.g. <u>How will you make it stable? How will it stand up? How could you make it stronger? Where are the weak points? How could you reinforce them? What tools and materials will you need? How can you improve the design?</u> - Encourage children to make their products with accuracy. They should regularly evaluate their work and their completed product, drawing on their design specification, and thinking about the intended purpose and user.
Structures – Years 5/6 – Frame structures			15. Related learning in other subjects Spoken language – ask relevant questions, formulate and express opinions, give well-structured descriptions and explanations. Use strategies to build their vocabulary. Art and design – use and develop drawing skills. Mathematics – apply understanding and skill to carry out accurate measuring using standard units i.e. cm/mm.	18. Key competencies <u>problem-solving</u> teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify	19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project.	20. Overall potential of project

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Design Technology Year 5 – Frame structures

Design, make and evaluate a gazebo model suitable to use (scaled up) at a school fair for adults and children. Consider ways a pulley system could be used to provide shade.

Crucial Knowledge:

- Frame structures are rigid support structures that use beams, columns and slabs to hold large forces of gravity and weight.
- Frame structures give shape and are useful for support & weight bearing.
- Frame structures have joints which are formed according to the design requirements and materials being used.
- Some examples of man-made objects that use frame structures are houses, skyscrapers, bridges, scaffolding, tables and roller coasters.
- The system of beams and columns in a frame structure can be further strengthened through the use of other features e.g. Triangulation will help to make your structure stronger. This is important when you are considering how to construct your bridge when creating stable joints.

Vocabulary:

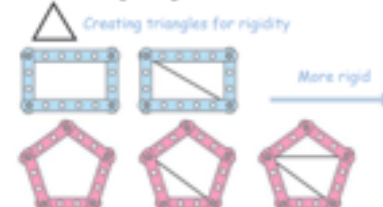
Frame structure	a structure made from thin components e.g. tent frame.
Reinforcement	The process of strengthening
Triangulation	the use of triangular shapes to strengthen a structure.
Compression	the application of pressure to squeeze an object.
Tension	a force pulling on a material or structure.
Pulley	A simple machine that has one or more wheels over which a rope is looped. A pulley can help lift heavy or things more easily.

We will be able to:

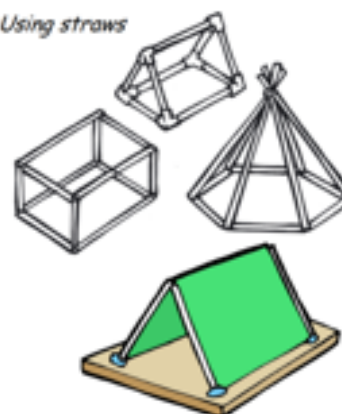
- Understand how to strengthen, stiffen and reinforce 3-D frameworks.
- Know and use technical vocabulary relevant to the project.



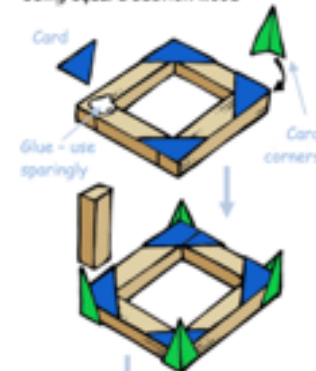
Understanding triangulation



Using straws



Using square section wood



Year 6

1. Year Groups Years 5/6	2. Aspect of D&T Electrical systems Focus: More complex switches and circuits	4. What could children design, make and evaluate? vehicle alarm security lighting system alarm for valuable artefact automatic nightlight electrical board game alarm for school shed Background Risk	5. Intended users vehicle owner themselves school community school administrator younger children siblings parents museum curator Specified age range	6. Purpose of products safety protection security detection warning comfort illumination entertainment Movement caused by electrical circuit and powered by battery	17. Key vocabulary battery, crocodile leads, bulbs, bulb holders, buzzers, light emitting diodes (LEDs), micro switches, reed switches and magnets, light dependent resistors (LDRs), wire, automatic wire strippers, masking tape, construction materials and tools as required computer control software and interface boxes or standalone boards resources leads
2. STEM Learning Knowledge Maths – Science – Computers –		7. Links to topics/themes Our School Toys and Games Keep Safe Curricula Culture and Leisure Travel Homes Buildings other – specify	3. Possible contexts home school community culture leisure enterprise business other – specify	8. Project title Design, make and evaluate a fairground ride to demonstrate how a mechanism can be powered by an electrical system. The ride should be suitable for a named age.	18. Possible resources batteries, crocodile leads, bulbs, bulb holders, buzzers, light emitting diodes (LEDs), micro switches, reed switches and magnets, light dependent resistors (LDRs), wire, automatic wire strippers, masking tape, construction materials and tools as required computer control software and interface boxes or standalone boards resources leads
3. Key learning in design and technology Prior learning • Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product. • Initial exploration 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. 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 then select 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 inventions who developed ground-breaking electrical systems and components. Technical knowledge and understanding • Understand and use electrical systems in their product. • Apply their understanding of computing to program, monitor and control their product. • Know and use technical vocabulary relevant to the project.		10. Investigative and Evaluative Activities (IEAs) • Using research, discuss a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting e.g. Who have the products been designed for and for what purpose? How and why is a computer control program used to operate the products? What input devices, e.g. switches, and output devices, e.g. LEDs, have been used? • Investigate electrical systems such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches. To gain an understanding of how they are operated by the user and how they work, ask the children to use each component to control a bulb in a simple circuit. Remind children about the dangers of mains electricity. • Children could research famous inventions related to the project e.g. Thomas Edison – light bulb. 12. Focused Tasks (FTs) • Through teacher demonstration and explanation, recap measuring, making out, cutting and joining skills with construction materials that children will need to create their electrical products. • Demonstrate and enable children to practice methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks. • Drawing on science understanding, ask the children to explore a range of electrical systems that could be used to control their products, including a simple series circuit where a single output device is controlled, a series circuit where two output devices are controlled by one switch and, where appropriate, parallel circuits where two output devices are controlled independently by two separate switches. • Drawing on related computing activities, ensure that children can write computer control programs that include inputs, outputs and decision making. Test out the programs using electrical components connected to interface boxes or standalone boxes. • Teach children how to avoid making short circuits.	11. Related learning in other subjects • Spoken Language – ask relevant questions, give well-structured descriptions and explanations. Build technical vocabulary. • Computing – use technologies for research purposes and be discerning when evaluating digital content. • Science – apply knowledge and understanding of circuits, switches, conductors and insulators. 13. Related learning in other subjects • Mathematics – apply understanding and skill to carry out accurate measuring using standard units i.e. centimetres. • Science – apply knowledge and understanding of circuits, switches, conductors and insulators. • Computing – design, write and debug programs that accomplish agreed goals, including controlling physical systems. Use sequences, selection, and repetition in programs. Work with variables and various forms of input and output.	14. Design, Make and Evaluate Assignment (DMEA) • Develop an authentic and meaningful design brief with the children. • Ask the children generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user. • Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams. Drawings should include the design decisions made, including the location of the electrical components and how they work as a system with an input, process and output. • Produce detailed step-by-step plans and lists of tools, equipment and materials needed. If appropriate, allocate tasks within a team. • Make high quality products, applying knowledge, understanding and skills from IEAs and FTs. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment. • Critically evaluate throughout and the final product, comparing it to the original design specification. Test the system to demonstrate its effectiveness for the intended user and purpose.	15. Related learning in other subjects • Mathematics – apply understanding and skill to carry out accurate measuring using standard units i.e. centimetres. • Science – apply knowledge and understanding of circuits, switches, conductors and insulators. • Computing – design, write and debug programs that accomplish agreed goals, including controlling physical systems. Use sequences, selection, and repetition in programs. Work with variables and various forms of input and output.
Electrical systems – Years 5/6 – More complex switches and circuits					16. Overall potential of project

User	Purpose	Functionality	Design decisions	Innovation	Authenticity
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Year 6 Design Technology Summer –

Design, make and evaluate a fairground ride to demonstrate how a mechanism can be powered by an electrical system.

The ride should be suitable for a named age range.

We will be able to:

Make a fairground ride which will be powered by an electrical system. You will design and make a structure using pre-cut shapes with the addition of materials which have possibly been recycled. To add a realistic feel to your ride, you will paint and decorate your ride using typical fairground colours. Your ride will have some form of carriage/gondola to enable customers to sit on your ride.

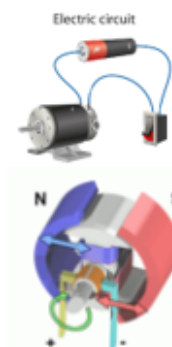
Crucial Knowledge:

- The origins of fairgrounds can be found in medieval times and by the 12th century, annual fairs were held by many villages and towns in England.
- John Wardley is a British developer for theme parks in the UK and Europe. He has created rides such as Nemesis and The Smiler.
- An electrical circuit with a motor can be used to create rotating parts, and this is used in fairground rides.
- There are many different types of rides found at the fairground, some suitable for young children, others more suitable for older children and adults. Many fairground rides have age and height restrictions. These are important for safety reasons.
- Famous fairgrounds include, Alton Towers and Blackpool Pleasure Beach.
- **By using a software programme such as Micro.Bit, it is possible to use Coding to switch the fairground on and off at intervals.**



Vocabulary:

- Rotation - The act of turning about a centre.
- Motor - A machine that supplies motive power for a vehicle or other device.
- Motor wheel – A wheel which can be attached to the motor to transfer movement to the ride.
- Framework - An essential supporting structure of a building, vehicle or object.
- Electrical system – A roughly circular route that starts and finishes at the same place.
- Force – Pushes and pulls in a particular direction.
- Friction – A force between two surface which are trying to slide across each other.
- Spindle – A spinning shaft or spike which can be horizontal or vertical and can be part of a moving mechanism.
- Battery – A container that can make electrical energy due to the reaction of certain chemicals. Energy can be stored.



Year Groups Years 5/6	2. Aspect of D&T Food Focus Celebrating culture and seasonality	4. What could children design, make and evaluate? bread pizza savoury biscuits savoury scones savoury muffin cereal snack soup	5. Intended users themselves younger children <u>parents</u> <u>older</u> people grandparents visitors people with special dietary needs consumers from a variety of cultures <u>family members</u>	6. Purpose of products festival <u>celebration</u> <u>special event</u> for sale food for travel picnic visit religious celebration	16. Possible resources information about food from around the world video clips of foods in the context of where they come from, used and eaten range of relevant examples of foods to taste and evaluate basic recipes suitable equipment and utensils to make and cook recipes such as: weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film	17. Key vocabulary ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs, <u>gluten</u> , <u>proving</u> <u>fat</u> , sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, <u>gluten</u> , dairy, allergy, intolerance, savoury, source, seasonality utensils, combine, <u>fold</u> , knead, stir, pour, mix, rubbing in, whisk, beat, roll out, shape, sprinkle, crumble design specification, innovative, research, evaluate, design brief
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Festivals Cultures/Celebrating Diversity Celebrations Special Events Seasons Sustainability Food Our Local Community Allergies and intolerances.	8. Possible contexts home school leisure culture traditions enterprise healthy eating local environment/community sustainability wider environment global citizenship Organic ingredients Food miles	9. Project title Design, make and evaluate a bread product suitable for a family to share at a cultural or religious celebration.		
3. Key learning in design and technology Prior learning - Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet. - Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients. 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 <u>ideas</u>, and make design decisions to develop a final product linked to user and purpose. - Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas. Making - Write a step-by-step recipe, including a list of ingredients, equipment and utensils - Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients. - Make, decorate and present the food product appropriately for the intended user and purpose. Evaluating - Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams. - Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements. - Understand how key chefs have influenced eating habits to promote varied and healthy diets. Technical knowledge and understanding - Know how to use utensils and equipment including heat sources to prepare and cook food. - Understand about seasonality in relation to food products and the source of different food products. - Know and use relevant technical and sensory vocabulary.		10. Investigative and Evaluative Activities (IEAs) - Children use first hand and secondary sources to carry out relevant research into existing products to include personal/cultural preferences, ensuring a healthy diet, meeting dietary needs and the availability of locally sourced/seasonal/organic ingredients. This could include a visit to a local bakery, farm, farm shop or supermarket e.g. <u>What ingredients are sourced locally/in the UK/from overseas?</u> <u>What are the key ingredients needed to make a particular product?</u> <u>How have ingredients been processed?</u> <u>What is the nutritional value of a product?</u> - Children carry out sensory evaluations of a variety of existing food products and ingredients relating to the project. The ingredients could include those that could be added to a basic recipe such as herbs, spices, vegetables or cheese. These could be locally sourced, seasonal, Fair Trade or organic. Present results in e.g. tables/graphs/charts and try using evaluative writing. - Use a range of questions to support children's ability to evaluate food ingredients and products e.g. <u>What ingredients help to make the product spicy/crisp/crunchy etc?</u> <u>What is the impact of added ingredients/finishes/shapes on the finished product?</u> - Research key chefs and how they have promoted seasonality, local produce and healthy eating.	12. Focused Tasks (FTs) - Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients. - Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically. - Techniques could be practised following a basic recipe to prepare and cook a savoury food product. - Ask questions about which ingredients could be changed or added in a basic recipe such as types of flour, seeds, garlic, vegetables. Consider texture, taste, appearance and smell. - When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. <u>Which shape is most appealing and why?</u>	11. Related learning in other subjects Mathematics and computing – making use of mathematical and computing skills to present results of sensory evaluations graphically, handling and interpreting data. Spoken language – developing relevant vocabulary including sensory descriptors. Give well-structured explanations. Science – using and developing skills of observing, questioning, changing state of ingredients. Geography – distribution of natural resources i.e. food. Computing – use technology purposefully to retrieve digital content.		
		14. Design, Make and Evaluate Assignment (DMEA) - Develop a design brief and simple design specification with the children within a context that is authentic and meaningful. This can include design criteria relating to nutrition and healthy eating. - Discuss the purpose of the products that the children will be designing, making and evaluating and who the products will be for. - Ask children to generate a range of ideas encouraging innovative responses. Agree on design criteria that can be used to guide the development and evaluation of the children's product. - Using annotated sketches, discussion and information and communication technology if appropriate, ask children to develop and communicate their ideas. - Ask children to record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs. - Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.		13. Related learning in other subjects Science – properties of materials and changes of state. <u>Food science, raising agents during making and baking, changing state of ingredients during making and baking</u> Mathematics – measuring mass kg/g. Understand and use approximate equivalences between metric and imperial units. Spoken language – new technical vocabulary.		18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
				15. Related learning in other subjects Mathematics – measurement of mass kg/g; understand and use approximate equivalence of metric and imperial units. Art and design – using and developing drawing skills. Spoken language – articulate and justify answers and opinions. Listen and respond to adults and peers. Writing – purpose of writing e.g. for planning and evaluation. Mathematics – measurement of mass kg/g. Science – recognise the impact of diet on the way their <u>bodies</u> function.		19. Health and safety Pupils should be taught to work safely and hygienically, using tools, equipment, techniques and ingredients appropriate to the task. Prior to undertaking this project risk assessments should be carried out, including identifying whether there are children who are not permitted to taste or handle any food ingredients or products.
						20. Overall potential of project 

1. Year Groups Years 6	2. Aspect of D&T Textiles Focus Combining different fabric shapes	4. What could children design, make and evaluate? tablet case mobile phone carrier shopping bag insulating bag hat/cap garden tool belt slippers sandals fabric advent calendar fabric door stop Fabric Gift bag	5. Intended users themselves younger children older children teenagers parents school grandparents teachers gardeners Individual choice	6. Purpose of products celebration educational interests hobbies environmental lifestyle religious protection other – specify	16. Possible resources existing textile products for investigation and deconstruction linked to their product wide selection of textiles including reclaimed and reusable fabrics, dipryl pins, needles, thread, measuring tape, left/right handed fabric scissors, pinky shears, iron, iron transfer paper, sewing machine range of fastenings, materials for insulating or strengthening e.g. bubble wrap, wadding, interfacing finishing materials e.g. sequins, buttons, fabric paints	17. Key vocabulary seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces embellish name of textiles and fastenings used, pin, needles, thread, pinky shears, fastenings, iron transfer paper design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype
2. STEM Existing Knowledge Maths – Science – Computing –		7. Links to topics and themes Clothing Hot and Cold Communication Festivals Celebrations Weather Sustainability Our School Environment	8. Possible contexts home school leisure culture enterprise environment local community Reuse recycle reduce repair	9. Project title Design, make and evaluate a fabric gift bag for a person of your choice. The bag should be embellished using a variety of ways.		
3. Key learning in design and technology Prior learning • Experience of basic stitching, joining textiles and finishing techniques. • Experience of making and using simple pattern pieces. Designing • Generate innovative ideas by carrying out research including surveys, interviews and questionnaires. • Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. • Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification. Making • Produce detailed lists of equipment and fabrics relevant to their tasks. • Formulate step-by-step plans and, if appropriate, allocate tasks within a team. • Select from and use a range of tools and equipment to make products that are accurately assembled and well finished. Work within the constraints of time, resources and cost. Evaluating • Investigate and analyse textile products linked to their final product. • Compare the final product to the original design specification. • Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose. • Consider the views of others to improve their work. Technical knowledge and understanding • A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics. • Fabrics can be strengthened, stiffened and reinforced where appropriate.		10. Investigative and Evaluative Activities (IEAs) • Children investigate, analyse and evaluate a range of existing products which have been produced by combining fabric shapes. Investigate work by designers and their impact on fabrics and products. Use questions to develop children's understanding e.g. <i>Is the product functional or decorative? Who would use this product? What is its purpose? What design decisions have been made? Do the textiles used match the intended purpose? What components have been used to enhance the appearance? To what extent is the design innovative?</i> • Children investigate and analyse how existing products have been constructed. Children disassemble a product and evaluate what the fabric shapes look like, how the parts have been joined, how the product has been strengthened and stiffened, what fastenings have been used and why. • Children investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.		11. Related learning in other subjects • Spoken language – ask questions, formulate, articulate and justify answers, arguments and opinions. Consider and evaluate different viewpoints. • Science – work scientifically investigating properties of fabrics. Children plan different types of scientific enquiries to answer questions. • History – significant person/people in their locality linked to textiles and products e.g. William Morris, Amanda Wakeley.		
		12. Focused Tasks (FTs) • Develop skills of threading needles and joining textiles using a range of stitches. This activity must build upon children's earlier experiences of stitches e.g. improving appearance and consistency of stitches and introducing new stitches. If available, demonstrate and allow children to use sewing machines to join fabric with close adult supervision. • Develop skills of sewing textiles by joining right side together and making seams. Children should investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening and learn how to start and finish off a row of stitches. • Develop skills of 2-D paper pattern making using grid or tracing paper to create a 3-D dipryl mock-up of a chosen product. Remind/teach how to pin a pattern on to fabric ensuring limited wastage, how to leave a seam allowance and different cutting techniques. • Develop skills of computer-aided design (CAD) by using on-line pattern making software to generate pattern pieces. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.		13. Related learning in other subjects • Mathematics – apply knowledge of how 2-D nets can be formed into 3-D shapes; apply skills of accurate measuring using standard units i.e. cm/mm. • Art and design – investigate methods of adding colour, pattern and texture on to textiles and how to make their own textiles through weaving or felt making. • Computing – children express themselves and develop ideas using a range of information and communication technology resources.		18. Key competencies problem-solving teamwork negotiation consumer awareness organisation motivation persuasion leadership perseverance other – specify
		14. Design, Make and Evaluate Assignment (DMEA) • Set an authentic and meaningful design brief. Children generate ideas by carrying out research using e.g. surveys, interviews, questionnaires and the web. Children develop a simple design specification for their product. • Communicate ideas through detailed, annotated drawings from different perspectives and/or computer-aided design. Drawings should indicate design decisions made, the methods of strengthening, the type of fabrics to be used and the types of stitching that will be incorporated. • Produce step-by-step plans, lists of tools equipment, fabrics and components needed. Allocate tasks within a team if appropriate. • Make high quality products applying knowledge, understanding and skills from IEAs and FTs. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric. Children use a range of decorating techniques to ensure a well-finished final product that matches the intended user and purpose. • Evaluate both as the children proceed with their work and the final product in use, comparing the final product to the original design specification. Critically evaluate the quality of the design, the manufacture, functionality, innovation shown and fitness for intended user and purpose, considering others' opinions. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently.		15. Related learning in other subjects • Art and design – use and apply drawing skills. • Writing and computing – write and record a radio advert, making use of persuasive writing features, sound effects and music to promote the final product or event it is advertising. • Computing – children express themselves and develop ideas using a range of information and communication technology resources. • Spoken language – consider and evaluate others' viewpoints. Give a well-structured oral evaluation to include relevant technical vocabulary.		19. Health and safety Pupils should be taught to work safely, using tools, equipment, materials, components and techniques appropriate to the task. Risk assessments should be carried out prior to undertaking this project. Suitability for consumer
					20. Overall potential of project	



User

Purpose

Functionality

Design decisions

Innovation

Authenticity



Year 6 Design Technology Autumn

Design, make and evaluate a seasonal fabric gift bag for a person of your choice.

We will be able to:

Make a fabric bag to hold a present for a person of your choice. Celebrating the Christian tradition of giving presents at Christmas. You will consider which materials can be used with minimal impact on the environment. The bag will be embellished using embroidery and applique.

Crucial Knowledge:

- The bag will need to hold an item, so will need a secure seam.
- A seam will be created by marking and measuring accurately 1.5cm. It will be pinned, tacked and then sewn by hand using a secure stitch such as backstitch.
- The seam can be open or closed depending on the finish needed.
- The container can be embellished in a variety of ways such as embroidery, applique and adding surface decorations such as sequins and buttons.
- There are many different types of hand stitching, these include running, blanket, back and chain stitch.
- It is important to make a paper template for each of the parts needed to make the container. These templates will be used to pin onto fabric before cutting out the necessary shapes. This will ensure an accurate finish.
- Due to small parts being used, the bag will not be suitable for small children.

Vocabulary:

- Embellish – to decorate an object using surface decoration such as sequins.
- Applique – to create a design by applying fabric to fabric using stitching or bonded webbing.
- Template – a model of the item to be made. Usually made from paper, it is used to ensure the object to be made, 'works,' that it fits together neatly and accurately.
- Embroidery – hand or machine stitches for decoration.
- Stitch – used for decoration or securing. Can be hand stitched or machine stitched.
- Seam allowance - the area between the fabric edge and the stitching line on two (or more) pieces of material being sewn together.
- Safety Hazard – a potential danger to safety. Toy safety is a legal requirement by all toy manufacturers.

