



## DT: Whole School Curriculum Map

### DT Curriculum Statement:

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

At Hallsville we aim to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook.

To support teachers' planning at Hallsville, we use **Projects on a Page**, which is a scheme of work from the **D&T Association**. It is based on the six essentials of good practice in D&T. Please see Non-Negotiables below.

### DT Non Negotiables at Hallsville:

**Projects on a Page** is based on the six essentials 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. They are consistent with the National Curriculum requirements and should be applied whenever children are designing and making products:

**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.

All DT units of work should follow a 4 part design process: Investigation, Design, Make and Evaluate.

Each of these 4 parts should be documented in the child's DT book.

In DT at Hallsville, children should design, make and evaluate products that solve real and relevant problems. Every DT unit should include an element of real-life problem solving. The end product produced by the children should be functional, able to be tested and evaluated.

- At the **investigative and evaluative stage (WMG)**, children explore a range of existing real-life products in order to ascertain what makes them work and what makes them good designs. This should include a range of examples including those that don't work so well as well as good examples. Children should derive success criteria through this exploration stage and find out about DT in the wider world.
- At the **skills development stage** children should be taught explicitly specific technical knowledge and the skills they will need in order to make their product.
- At the **brief setting stage** children should be given a brief and/ or a problem to solve so that they are clear on who the product is for and what the purpose of the product is. Children should have the opportunity to gather data about the needs of the consumer/end user.
- At the **design stage** children will explore and record ideas about the product they are going to make, identifying the tools and materials they will need and planning the sequence which they will follow to make their product.
- At the **making stage**, children should select from and use a range of tools and equipment to create functional products with user and purpose in mind.
- At the **evaluation stage**, children should evaluate their final product against their design criteria.



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**NOTE:** Dependant upon time constraints, the first 'make' should be a prototype/ mock-up the evaluation of which should inform the production of the final product. Children should keep referring back to the WMG criteria derived from the **investigative and evaluative stage**.

Each unit of DT should last for approximately 9 hours. Complete schemes of work for all units which include knowledge and skills progression in DT, have been purchased from the DT Association and can be found on school's Google Drive to support teacher's subject knowledge and professional development. DT consultant Martin Chandler can also be booked to support the planning and delivery of any DT unit.

<https://www.data.org.uk/> DT association login: Scottwillkie19 Pword: Scottwillkie19

### Hallsville DT curriculum overview

#### Nursery and Reception (EYFS)



#### **Birth to three – babies, toddlers and young children will be learning to:**

Start to make marks intentionally.

Explore paint, using fingers and other parts of their bodies as well as brushes and other tools.

Express ideas and feelings through making marks, and sometimes give a meaning to the marks they make.

#### **Examples of how to support this:**

Stimulate babies' and toddlers' early interest in making marks. Offer a wide range of different materials and encourage children to make marks in different ways.

#### Suggestions:

- invite them to submerge their fingers in cornflour
- play with a stick in the mud
- place hands and feet in paint
- use tablets or computers
- introduce colour names



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### **Birth to three – babies, toddlers and young children will be learning to:**

Explore different materials, using all their senses to investigate them. Manipulate and play with different materials.

Use their imagination as they consider what they can do with different materials.

Make simple models which express their ideas.

### **Examples of how to support this:**

Stimulate young children's interest in modelling.

Suggestions: provide a wide range of found materials ('junk') as well as blocks, clay, soft wood, card, offcuts of fabrics and materials with different textures. Provide appropriate tools and joining methods for the materials offered.

Encourage young children to explore materials/ resources finding out what they are/what they can do and decide how they want to use them.



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**3 and 4-year-olds will be learning to:**

**Examples of how to support this:**

Explore different materials freely, to develop their ideas about how to use them and what to make.

Develop their own ideas and then decide which materials to use to express them.

Join different materials and explore different textures.

Offer opportunities to explore scale.

Suggestions:

- long strips of wallpaper
- child size boxes
- different surfaces to work on e.g., paving, floor, tabletop or easel

Listen and understand what children want to create before offering suggestions.

Invite artists, musicians and craftspeople into the setting, to widen the range of ideas which children can draw on.

Suggestions: glue and masking tape for sticking pieces of scrap materials onto old cardboard boxes, hammers and nails, glue guns, paperclips and fasteners.



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**3 and 4-year-olds will be learning to:**

**Examples of how to support this:**

Create closed shapes with continuous lines and begin to use these shapes to represent objects.

Draw with increasing complexity and detail, such as representing a face with a circle and including details.

Use drawing to represent ideas like movement or loud noises.

Show different emotions in their drawings and paintings, like happiness, sadness, fear, etc.

Explore colour and colour mixing.

Show different emotions in their drawings – happiness, sadness, fear, etc.

Help children to develop their drawing and modelmaking. Encourage them to develop their own creative ideas. Spend sustained time alongside them. Show interest in the meanings children give to their drawings and models. Talk together about these meanings.

Encourage children to draw from their imagination and observation.

Help children to add details to their drawings by selecting interesting objects to draw, and by pointing out key features to children and discussing them.

Talk to children about the differences between colours. Help them to explore and refine their colour mixing – for example: “How does blue become green?”

Introduce children to the work of artists from across times and cultures. Help them to notice where features of artists’ work overlap with the children’s, for example in details, colour, movement or line.



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	Autumn Term	Spring Term	Summer Term
Year 1	<p><b>Sliders and levers</b>            Projects on a page – Y1 Sliders and levers Mechanisms</p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Early experiences of working with paper and card to make simple flaps and hinges.</li> <li>• Experience of simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.</li> </ul> <p><b>What children should be taught:</b>  <b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Explore and use sliders and levers.</li> <li>• Understand that different mechanisms produce different types of movement. • Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>• Develop, model and communicate their ideas through drawings and mock-ups with card and paper.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> <li>• Select and use tools, explaining their choices, to cut, shape and join paper and card.</li> <li>• Use simple finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore a range of existing books and everyday products that use simple sliders and levers.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose and the user and whether it meets design criteria.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Children explore a range books/greetings cards with sliders and levers e.g. Jan Pienkowski, Robert Sabuda and cards from Paperchase.e.g. What is it? Who is it for? What is it for?</li> </ul>	<p><b>Can you design a puppet with a face and mouth that moves and use it to tell a story?</b>            Textiles - Templates and joining techniques</p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Explored and used different fabrics.</li> <li>• Cut and joined fabrics with simple techniques.</li> <li>• Thought about the user and purpose of products.</li> </ul> <p><b>What children should be taught:</b>  <b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand how simple 3-D textile products are made, using a template to create two identical shapes.</li> <li>• Understand how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.</li> <li>• Explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons.</li> <li>• Know and use technical vocabulary relevant to the project</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design a functional and appealing product for a chosen user and purpose based on simple design criteria.</li> <li>• Generate, develop, model and communicate their ideas as appropriate through talking, drawing, templates, mock-ups and information and communication technology.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.</li> <li>• Select from and use textiles according to their characteristics. <b>Evaluating</b></li> <li>• Explore and evaluate a range of existing textile products relevant to the project being undertaken.</li> <li>• Evaluate their ideas throughout and their final products against original design criteria.</li> </ul>	<p><b>Can you design and make a fruit salad?</b>            Cooking and Nutrition            Projects on a Page - Preparing fruits and vegetables</p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell.</li> <li>• Experience of cutting soft fruit and vegetables using appropriate utensils.</li> </ul> <p><b>What children should be taught:</b>  <b>Technical knowledge and understanding</b></p> <ul style="list-style-type: none"> <li>• Understand where a range of fruit and vegetables come from e.g. farmed or grown at home.</li> <li>• 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.</li> <li>• Know and use technical and sensory vocabulary relevant to the project.</li> </ul> <p><b>Designing</b></p> <ul style="list-style-type: none"> <li>• Design appealing products for a particular user based on simple design criteria.</li> <li>• Generate initial ideas and design criteria through investigating a variety of fruit and vegetables.</li> <li>• Communicate these ideas through talk and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.</li> <li>• Select from a range of fruit and vegetables according to their characteristics e.g. colour, texture and taste to create a chosen product.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences.</li> <li>• Evaluate ideas and finished products against design criteria, including intended user and purpose.</li> </ul> <p><b>Starting point:</b></p>



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<ul style="list-style-type: none"> <li>• Use questions to develop children’s understanding e.g. 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?</li> <li>• Introduce and develop vocabulary e.g. lever, pivot, slider, left, right, push, pull, up, down, forwards, backwards, in, out.</li> </ul> <p>It would be good for children to see good examples and poor examples in order to see WMG.</p> <p><b>Skills development</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use questions to develop children’s understanding e.g. 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?</li> <li>• 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.</li> </ul> <p><b>Suggested brief:</b> Design and make a birthday card for someone in your family or a friend.</p> <p><b>Context:</b> Links to RE autumn topics</p>	<p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Children investigate a range of puppets i.e., glove puppet, sock puppet or a finger puppet. . Explore and compare e.g. fabrics, joining techniques, finishing techniques and fastenings used.</li> <li>• 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?</li> <li>• Make drawings of existing products, stating the user and purpose. Identify and label, if appropriate, the fabrics, fastenings and techniques used.</li> </ul> <p>It would be good for children to see good examples and poor examples in order to see WMG.</p> <p><b>Skills development</b></p> <ul style="list-style-type: none"> <li>• Investigate fabrics to determine which is best for the purpose of the product they are creating.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> <li>• 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.</li> </ul> <p><b>Suggested brief:</b> Design and make a puppet for either TFW texts which children can use when retelling the story.</p> <p><b>Context:</b> Links to TFW texts</p>	<ul style="list-style-type: none"> <li>• Children taste test a variety of fruit salads including freshly made, freshly made from a supermarket &amp; tinned. Use questions to develop children’s understanding e.g. What is this called? Who has eaten this fruit 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?</li> <li>• Provide opportunities for children to handle, smell and taste fruit in order to describe them through talking and drawing. e.g. What words can we use to describe the shape, colour, feel, taste?</li> <li>• 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. What do you prefer and why? What might we want to include in our product to meet our user’s preferences? Which fruit might be the best for our product to match the occasion/purpose?</li> <li>• Children identify preferences and create a chart to show these.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development</b></p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• 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. 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.</li> <li>• Discuss healthy eating advice, including eating more fruit and vegetables; using The eatwell plate model talk about the importance of fruit and</li> </ul>
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			<p>vegetables in our balanced diet e.g. 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?</p> <p><b>Suggested brief:</b> Can you design and make a fruit salad for someone that is trying to live a healthy lifestyle/for the PE coaches</p> <p><b>Context:</b> Links to science topic re: looking after ourselves or Geography topic e.g. make the fruit salad linked to produce in different parts of the world.</p>
<p style="text-align: center;"><b>Year 2</b></p>	<p>Can you design and make a bug house? Structures Projects on a page - free standing structures units</p> <p><b>Prior learning</b></p> <ul style="list-style-type: none"> <li>• Experience of using construction kits to build walls, towers and frameworks.</li> <li>• Experience of using basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.</li> <li>• Experience of different methods of joining card and paper.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to make freestanding structures stronger, stiffer and more stable.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate ideas based on simple design criteria and their own experiences, explaining what they could make.</li> <li>• Develop, model and communicate their ideas through talking, mock-ups and drawings.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan by suggesting what to do next.</li> </ul>	<p>Cooking and nutrition - Can you design and make a healthy sandwich? Cooking and Nutrition Projects on a page Unit</p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and The eatwell plate.</li> <li>• Have used some equipment and utensils and prepared and combined ingredients to make a product.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>• Know and use relevant technical and sensory vocabulary appropriately.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate and clarify ideas through discussion with peers and adults to develop design criteria including appearance, taste, texture and aroma for</li> </ul>	<p>Can you make a vehicle that can travel on land? (Linked to Geography) Mechanisms - Wheels and axles Projects on a page unit</p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Assembled vehicles with moving wheels using construction kits.</li> <li>• Explored moving vehicles through play.</li> <li>• Gained some experience of designing, making and evaluating products for a specified user and purpose.</li> <li>• Developed some cutting, joining and finishing skills with card.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Explore and use wheels, axles and axle holders.</li> <li>• Distinguish between fixed and freely moving axles.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate initial ideas and simple design criteria through talking and using own experiences.</li> <li>• Develop and communicate ideas through drawings and mock-ups.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Select from and use a range of tools and</li> </ul>





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<ul style="list-style-type: none"> <li>• Select and use tools, skills and techniques, explaining their choices.</li> <li>• Select new and reclaimed materials and construction kits to build their structures.</li> <li>• Use simple finishing techniques suitable for the structure they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.</li> <li>• Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• 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.</li> <li>• Include examples of bird houses, bat boxes, hedgehog shelters, rabbit/guinea pig hutches, bug hotels</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	<p>an appealing product for a particular user and purpose.</p> <ul style="list-style-type: none"> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>• Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• 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?</li> <li>• Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet.</li> <li>• 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</li> </ul>	<p>equipment to perform practical tasks such as cutting and joining to allow movement and finishing.</p> <ul style="list-style-type: none"> <li>• Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of products with wheels and axles.</li> <li>• Evaluate their ideas throughout and their products against original criteria.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Explore and evaluate a range of wheeled products 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. 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?</li> <li>• 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.</li> <li>• Walk around the school building and grounds, recording how wheels and axles are used in daily life.</li> <li>• Read a story or non-fiction book that includes a wheeled product. Use this to introduce relevant vocabulary and to emphasise user and purpose.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Using construction kits with wheels and axles, ask children to make a product that moves.</li> <li>• Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles.</li> <li>• Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders.</li> <li>• Ensure that children are taught how to mark out, hold, cut and join materials and components correctly.</li> <li>• Using samples of materials and components they will use when designing and making, ask the children</li> </ul>
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	<p>Discuss the suitability of materials for their products according to their characteristics.</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Ask children to fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins. 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?</li> </ul> <p><b>Suggested brief:</b> Nursery and Reception are looking for some good quality bug houses which they can situate in their areas to attract a larger variety of bugs for when they study minibeasts. These need to be weather resistant and robust.</p> <p><b>Context:</b> Links to science curriculum of materials.</p>	<p>/cheese /eggs come from? How and why are they processed?</p> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Food preparation and cooking techniques could be practised by making a food product using an existing recipe.</li> <li>• 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?</li> </ul> <p><b>Suggested brief:</b> Provide children with a ‘fake’ letter from the school kitchen. The school kitchen provides a school packed lunch for trips however; the lunches are not always eaten. Children in year 2 are commissioned by the kitchen to design a healthy and enticing packed lunch which children will eat. Year 2 can gather data from year 3 on the types of packed lunches they enjoy and then after test their lunches out on year 3 for their spring term trip.</p> <p><b>Context:</b> Links to PSHE Healthy me topic and builds on science topic of animals including humans in year 1 and 2.</p>	<p>to assemble some examples of wheel, axle, axle holder combinations. Display the work completed as a reference for their DMEA.</p> <p><b>Suggested brief:</b> The meerkat from Meerkat Mail writes a postcard to children asking them to help him design a vehicle which will allow him to travel across the desert quickly and safely to avoid the jackal. The vehicle needs to be able to travel on sand.</p> <p><b>Context:</b> Links to Literacy story from Spring 1 and Geography topic One world – pushing boundaries.</p>
<p><b>Year 3</b></p>	<p>Moving Animal Toys Can you make a moving toy/monster – link to dragons</p> <p><b>Mechanical systems / Pneumatics</b> <b>Projects on a Page Learning Journey and CPD</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Explored simple mechanisms, such as sliders and levers, and simple structures.</li> </ul>	<p>Can you make a healthy pasta dish?</p> <p><b>Cooking and Nutrition</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and The eatwell plate.</li> </ul>	<p>Can you make a picture frame that doesn’t collapse?</p> <p><b>Structures</b> <b>Projects on a page</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Experience of using measuring, marking out, cutting, joining, shaping and finishing techniques with construction materials.</li> </ul>



## DT: Whole School Curriculum Map

<ul style="list-style-type: none"> <li>• Learnt how materials can be joined to allow movement.</li> <li>• Joined and combined materials using simple tools and techniques.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Understand and use pneumatic mechanisms.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate realistic and appropriate ideas and their own design criteria through discussion, focusing on the needs of the user.</li> <li>• Use annotated sketches and prototypes to develop, model and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Order the main stages of making.</li> <li>• Select from and use appropriate tools with some accuracy to cut and join materials and components such as tubing, syringes and balloons.</li> <li>• Select from and use finishing techniques suitable for the product they are creating.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and analyse books, videos and products with pneumatic mechanisms.</li> <li>• Evaluate their own products and ideas against criteria and user needs, as they design and make.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Children investigate, analyse and evaluate familiar objects that use air to make them work e.g. bicycle pump, balloon, inflatable swimming aids, foot pump for inflating an air bed. What does the air do? How has it been used in the design of these products? How can air be used to move heavy objects?</li> <li>• Construct a simple pneumatic system by joining a balloon to 5mm tubing and then to a washing-up liquid bottle. What happens to the air when you squeeze the bottle? What happens when you let go? Can you lift a soft toy or a notepad using a balloon?</li> <li>• Demonstrate lifting an object and ask the children to think about ways in which this might be used in a product. Who might it be for? What is its purpose? What part moved and how did it move? What</li> </ul>	<ul style="list-style-type: none"> <li>• Have used some equipment and utensils and prepared and combined ingredients to make a product.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>• Know and use relevant technical and sensory vocabulary appropriately.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> <li>• Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>• Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>• Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• Basic understanding of what structures are and how they can be made stronger, stiffer and more stable.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Understand how to strengthen, stiffen and reinforce 3-D frameworks.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Carry out research into user needs and existing products, using surveys, interviews, questionnaires and web-based resources.</li> <li>• Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost.</li> <li>• Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.</li> <li>• Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.</li> <li>• Use finishing and decorative techniques suitable for the product they are designing and making.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and evaluate a range of existing frame structures.</li> <li>• Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests.</li> <li>• Research key events and individuals relevant to frame structures.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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</li> </ul>
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## DT: Whole School Curriculum Map

	<p>materials have been used? How effective do you think it is and why? What else could move?</p> <ul style="list-style-type: none"> <li>• Demonstrate a range of pneumatic mechanisms using prepared teaching aids including two syringes joined by plastic tubing; three syringes connected using a T-connector and using different sized syringes. Ask the children: What happens when the plunger of one syringe is pressed in? Why do the syringes move at different speeds? Note: take care as the syringe may come out with force. Discuss why, when pressing a large syringe, it can take time and feel 'squishy' before the smaller syringe is moved.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles. Introduce ways in which pneumatic systems can be used to operate levers.</li> <li>• Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.</li> <li>• Provide the materials and ask the children to try out and draw the three systems they have been shown: a) Balloon connected to a washing-up liquid bottle. What happens when you squeeze the bottle? What happens when you let go? b) Two syringes of the same size connected together. What happens when you press the plunger of one syringe down? How far does the other syringe move? c) Two syringes of different sizes connected together. How far do these syringes move when pressed? Note: take care as the syringe may come out with force.</li> </ul> <p><b>Suggested brief:</b> Children are to design and make a moving toy which could be used to retell a story in the year 3 curriculum or a story in the year 1 or 2 curriculum which provides children with a larger variety of characters and ideas.</p> <p><b>Context:</b> Links to literacy TFW text across years 1-3.</p>	<p>ingredients have been used? Which food groups do they belong to? What substances are used in the products e.g. nutrients, water and fibre?</p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet.</li> <li>• 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?</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Food preparation and cooking techniques could be practised by making a food product using an existing recipe.</li> <li>• 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?</li> </ul> <p><b>Suggested brief:</b> For their POW visit to the synagogue, children are to design and make a kosher pasta salad which they can take with them on their trip. Children will need to investigate what foods are kosher.</p>	<p>range e.g. 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?</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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. How could each of the frameworks be reinforced and strengthened?</li> <li>• Demonstrate the accurate use of tools and equipment. 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.</li> <li>• Demonstrate skills and techniques for accurately joining framework materials together e.g. paper straws, square sectioned wood. Ask children to practise these, mounting their joints onto card for future reference.</li> </ul>
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## DT: Whole School Curriculum Map

		<p><b>Context:</b> Links to RE How do Jews celebrate at home and in the synagogue.</p>	<p><b>Suggested brief:</b> The school photo frames are prone to collapsing after a few weeks. Children need to design and make a more robust photo frame which will remain standing without collapsing. Frames need to be able to stand on a surface.</p> <p><b>Context:</b> Links to Maths angles and lines.</p>
<p><b>Year 4</b></p>	<p>Can you create a working night light as a gift for children in reception?  <b>Electrical Systems - Simple planning and control **</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers.</li> <li>• Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</li> <li>• Apply their understanding of computing to program and control their products.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Gather information about needs and wants, and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.</li> <li>• Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Order the main stages of making.</li> <li>• Select from and use tools and equipment to cut, shape, join and finish with some accuracy.</li> <li>• Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.</li> </ul>	<p>Who can design and make the most popular breakfast bar for the teachers?  <b>Cooking and Nutrition</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Know some ways to prepare ingredients safely and hygienically.</li> <li>• Have some basic knowledge and understanding about healthy eating and The eatwell plate.</li> <li>• Have used some equipment and utensils and prepared and combined ingredients to make a product.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to use appropriate equipment and utensils to prepare and combine food.</li> <li>• Know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or caught.</li> <li>• Know and use relevant technical and sensory vocabulary appropriately.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Use annotated sketches and appropriate information and communication technology, such as web-based recipes, to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of a recipe, listing ingredients, utensils and equipment.</li> </ul>	<p>Can you create a bag for life to replace plastic bags?  <b>Textiles</b>  <b>Projects on a page 2D shapes to 3D projects</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Have joined fabric in simple ways by gluing and stitching.</li> <li>• Have used simple patterns and templates for marking out.</li> <li>• Have evaluated a range of textile products.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to strengthen, stiffen and reinforce existing fabrics.</li> <li>• Understand how to securely join two pieces of fabric together.</li> <li>• Understand the need for patterns and seam allowances.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.</li> <li>• Produce annotated sketches, prototypes, final product sketches and pattern pieces.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Plan the main stages of making.</li> <li>• Select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing.</li> <li>• Select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate a range of 3-D textile products relevant to the project.</li> </ul>



## DT: Whole School Curriculum Map

	<p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Investigate and analyse a range of existing battery-powered products.</li> <li>Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available e.g. Where and why they are used? How does the product work? What are its key features and components? How does the switch work? Is the product manually controlled or controlled by a computer? What materials have been used and why? How is it suited to its intended user and purpose?</li> <li>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. How might different types of switches be useful in different types of products?</li> <li>Remind children about the dangers of mains electricity.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>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.</li> <li>Demonstrate how to find a fault in a simple circuit and correct it, giving pupils opportunities to practise.</li> <li>Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers.</li> <li>Ask the children to make a variety of switches by using simple classroom materials e.g. card,</li> </ul>	<ul style="list-style-type: none"> <li>Select and use appropriate utensils and equipment to prepare and combine ingredients.</li> <li>Select from a range of ingredients to make appropriate food products, thinking about sensory characteristics.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>Carry out sensory evaluations of a variety of ingredients and products. Record the evaluations using e.g. tables and simple graphs.</li> <li>Evaluate the ongoing work and the final product with reference to the design criteria and the views of others.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>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?</li> <li>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?</li> <li>Gather information about existing products available relating to your product. Visit a local supermarket and/or use the internet.</li> <li>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?</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>Learn to select and use a range of utensils and use a range of techniques as appropriate to prepare</li> </ul>
		<ul style="list-style-type: none"> <li>Test their product against the original design criteria and with the intended user.</li> <li>Take into account others' views.</li> <li>Understand how a key event/individual has influenced the development of the chosen product and/or fabric.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>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.</li> <li>Give children the opportunity to disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances.</li> <li>Use questioning to develop understanding e.g. 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?</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>Demonstrate a range of stitching techniques and allow children to practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances.</li> <li>Allow children to use a textile product they have taken apart to create a paper pattern using 2-D shapes.</li> <li>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</li> </ul>



## DT: Whole School Curriculum Map

	<p>corrugated plastic, aluminium foil, paper fasteners and paper clips. 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.</p> <ul style="list-style-type: none"> <li>• Teach children how to avoid making short circuits.</li> </ul> <p><b>Suggested brief:</b> Reception teachers to commission year 4 to create night lights linked to one of receptions TFW texts for their reading area. Children can complete some market research questioning reception children which books or characters are their favourite.</p> <p><b>Context:</b> Links to reception TFW texts and science topic electricity.</p>	<p>ingredients hygienically including the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.</p> <ul style="list-style-type: none"> <li>• Food preparation and cooking techniques could be practised by making a food product using an existing recipe.</li> <li>• 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?</li> </ul> <p><b>Suggested brief:</b> Ms Edge has commissioned the year 4 children to design and make breakfast bars for the teachers and support staff as she feels they need a boost in the morning. Children to complete market research asking teachers what they favourite types of breakfast bars include.</p> <p><b>Context:</b> Links to science topic states of matter.</p>	<p>finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing.</p> <ul style="list-style-type: none"> <li>• Use questioning to develop understanding e.g. 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?</li> </ul> <p><b>Suggested brief:</b> Children are to create a bag for life for their family. It needs to be able to close to keep shopping safe and it needs to be made from a sustainable environmentally friendly material in order to reduce plastic waste.</p> <p><b>Context:</b> Links to geography topic what happens to plastic waste (rivers, lakes, seas &amp; oceans).</p>
<p style="text-align: center;"><b>Year 5</b></p>	<p>Can you design Christmas lights that activate automatically when it is dark <u>but then switch off after 2 hours</u> (extension activity)? <u>Electrical systems</u></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Understanding of the essential characteristics of a series circuit and experience of creating a battery-powered, functional, electrical product.</li> <li>• Initial experience of using computer control software and an interface box or a standalone box, e.g. writing and modifying a program to make a light flash on and off.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Understand and use electrical systems in their products.</li> <li>• Apply their understanding of computing to program, monitor and control their products.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p>	<p>Can you design, make and evaluate your own bread? Bread – KOKURA Workshops <u>Cooking and Nutrition</u> <u>Projects on a page celebrating culture and season unit</u></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.</li> <li>• Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to use utensils and equipment including heat sources to prepare and cook food.</li> <li>• Understand about seasonality in relation to food products and the source of different food products.</li> <li>• Know and use relevant technical and sensory vocabulary.</li> </ul> <p><b>Designing:</b></p>	<p>Can you design and make a moving toy? Cams <u>Mechanisms Possible link with Fords</u></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Experience of axles, axle holders and wheels that are fixed or free moving.</li> <li>• Basic understanding of different types of movement.</li> <li>• Experience of cutting and joining techniques with a range of materials including card, plastic and wood.</li> <li>• An understanding of how to strengthen and stiffen structures.</li> </ul> <p><b>What Children should be taught:</b> <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Understand that mechanical systems have an input, process and an output.</li> <li>• Understand how cams can be used to produce different types of movement and change the direction of movement.</li> <li>• Know and use technical vocabulary relevant to the project.</li> </ul> <p><b>Designing:</b></p>



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<ul style="list-style-type: none"> <li>• 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.</li> <li>• Generate and develop innovative ideas and share and clarify these through discussion.</li> <li>• Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components.</li> <li>• Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product.</li> <li>• Create and modify a computer control program to enable an electrical product to work automatically in response to changes in the environment.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Continually evaluate and modify the working features of the product to match the initial design specification.</li> <li>• Test the system to demonstrate its effectiveness for the intended user and purpose.</li> <li>• Investigate famous inventors who developed ground-breaking electrical systems and components.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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. bulbs, have been used?</li> <li>• Investigate electrical sensors 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</li> </ul>	<ul style="list-style-type: none"> <li>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.</li> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</li> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>• Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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?</li> <li>• Children carry out sensory evaluations of a variety of existing food products and ingredients relating to</li> </ul>	<ul style="list-style-type: none"> <li>• Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</li> <li>• Develop a simple design specification to guide their thinking.</li> <li>• Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>• Select from and use a range of tools and equipment to make products that that are accurately assembled and well finished. Work within the constraints of time, resources and cost.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Compare the final product to the original design specification.</li> <li>• Test products with the intended user, where safe and practical, and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work.</li> <li>• Investigate famous manufacturing and engineering companies relevant to the project.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Discuss with the children different types of movement: rotary, oscillating and reciprocating. Make simple models of different types of cams or have toys in which the cam mechanisms can be seen. Use videos, photographs and computer animations of products that cannot be explored through first-hand experience.</li> <li>• Encourage children to look for different types of movement in the home and in school.</li> <li>• Use observational drawings and questions to develop understanding of the products in the handling collection and those that children have researched e.g. How innovative is the product? What design decisions have been made? What type of movement can be seen? What types of mechanical components are used and where are they positioned? What are the input movement, process</li> </ul>
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	<p>each component to control a bulb in a simple circuit. Remind children about the dangers of mains electricity.</p> <ul style="list-style-type: none"> <li>• Children could research famous inventors related to the project e.g. Thomas Edison – light bulb.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Through teacher demonstration and explanation, recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products.</li> <li>• Demonstrate and enable children to practise methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks.</li> <li>• 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.</li> <li>• 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.</li> <li>• Teach children how to avoid making short circuits.</li> </ul>	<p>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.</p> <ul style="list-style-type: none"> <li>• 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/crisp/crunchy etc? What is the impact of added ingredients/ finishes/ shapes on the finished product?</li> <li>• Research key chefs and how they have promoted seasonality, local produce and healthy eating.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.</li> <li>• Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically.</li> <li>• Techniques could be practised following a basic recipe to prepare and cook a savoury food product.</li> <li>• 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.</li> <li>• 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?</li> </ul>	<p>and output movement of the system? How well does the product work? Why have the materials and components been chosen? How well has it been designed? How well has it been made?</p> <ul style="list-style-type: none"> <li>• Children could research and, if possible, visit engineering and manufacturing companies that are relevant to the product they are designing and making e.g. car engine manufacturers</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Give children pre-cut cams made from MDF or wooden wheels to mount on a piece of board and observe their movement with a follower.</li> <li>• Demonstrate how to use a hand drill safely to make an off-centre cam and position it accurately in a housing. Ensure children secure the wheel with a G-clamp and use a piece of scrap wood under the wheel to avoid drilling through the bench hook or table. Stress the importance of measuring accurately and checking before cutting any holes or glueing. It is important to line up the cam and follower otherwise the mechanism may not work smoothly. How high will the cam lift the follower?</li> <li>• Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to make cam mechanisms and construct wooden frames or card housings, as appropriate. Demonstrate the accurate and safe use of tools and equipment.</li> </ul>
<p style="text-align: center;"><b>Year 6</b></p>	<p>Who can make the tastiest pizza? <b>Cooking and Nutrition</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Have knowledge and understanding about food hygiene, nutrition, healthy eating and a varied diet.</li> </ul>	<p>Can you design and make a pencil case for secondary school? <b>Textiles combining different fabrics</b></p> <p><b>Prior learning:</b></p> <ul style="list-style-type: none"> <li>• Experience of basic stitching, joining textiles and finishing techniques.</li> </ul>	<p>Lego WEDO taught through Computing. See Lego WEDO planning <b>Electricity Systems - Control Technology</b></p> <p><b>Prior learning:</b></p>



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<p>• Be able to use appropriate equipment and utensils, and apply a range of techniques for measuring out, preparing and combining ingredients.</p> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• Know how to use utensils and equipment including heat sources to prepare and cook food.</li> <li>• Understand about seasonality in relation to food products and the source of different food products.</li> <li>• Know and use relevant technical and sensory vocabulary.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification.</li> <li>• Explore a range of initial ideas, and make design decisions to develop a final product linked to user and purpose.</li> <li>• Use words, annotated sketches and information and communication technology as appropriate to develop and communicate ideas.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Write a step-by-step recipe, including a list of ingredients, equipment and utensils</li> <li>• Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.</li> <li>• Make, decorate and present the food product appropriately for the intended user and purpose.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Evaluate the final product with reference back to the design brief and design specification, taking into account the views of others when identifying improvements.</li> <li>• Understand how key chefs have influenced eating habits to promote varied and healthy diets.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• Children use first hand and secondary sources to carry out relevant research into existing products to</li> </ul>	<ul style="list-style-type: none"> <li>• Experience of making and using simple pattern pieces.</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b></p> <ul style="list-style-type: none"> <li>• A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.</li> <li>• Fabrics can be strengthened, stiffened and reinforced where appropriate.</li> </ul> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• Generate innovative ideas by carrying out research including surveys, interviews and questionnaires.</li> <li>• Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design.</li> <li>• Design purposeful, functional, appealing products for the intended user that are fit for purpose based on a simple design specification.</li> </ul> <p><b>Making</b></p> <ul style="list-style-type: none"> <li>• Produce detailed lists of equipment and fabrics relevant to their tasks.</li> <li>• Formulate step-by-step plans and, if appropriate, allocate tasks within a team.</li> <li>• 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.</li> </ul> <p><b>Evaluating</b></p> <ul style="list-style-type: none"> <li>• Investigate and analyse textile products linked to their final product.</li> <li>• Compare the final product to the original design specification.</li> <li>• Test products with intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose.</li> <li>• Consider the views of others to improve their work.</li> </ul> <p><b>Starting point:</b></p> <ul style="list-style-type: none"> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• I can plan and test my algorithms and programs, detecting and correcting errors as needed</li> <li>• I can use if...then command within a series of instructions</li> <li>• I can start a program in different ways</li> <li>• Sequence at least 3 "say" blocks between two sprites (characters) to construct a dialogue.</li> <li>• I can use variables in programs</li> <li>• I can design and write a program that controls or simulates physical systems and sensors</li> <li>• I can modify loops to produce a given outcome</li> <li>• I can identify which parts of a loop can be changed</li> <li>• I can explain the effect of my changes</li> <li>• I can re-use existing code snippets on new sprites</li> <li>• I can evaluate the use of repetition in a project</li> <li>• I can explain that a condition is either true or false</li> <li>• I can design a conditional loop</li> <li>• I can test and debug my project</li> <li>• I can explain that a variable has a name and a value</li> <li>• I can recognise that the value of a variable can be changed</li> </ul> <p><b>What Children should be taught:</b>  <b>Technical knowledge and understanding:</b>          Design, plan &amp; create a more complex game / app with purpose and linked to topic / other subject</p> <p><b>Designing:</b></p> <ul style="list-style-type: none"> <li>• I can plan and test my algorithms and programs, detecting and correcting errors as needed</li> <li>• I can design and write a program that controls or simulates physical systems and sensors</li> </ul> <p><b>Skills development:</b></p>
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	<p>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?</p> <p>What are the key ingredients needed to make a particular product? How have ingredients been processed? What is the nutritional value of a product?</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• 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/ crisp/ crunchy etc? What is the impact of added ingredients/ finishes/ shapes on the finished product?</li> <li>• Research key chefs and how they have promoted seasonality, local produce and healthy eating.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.</li> <li>• Demonstrate how to use appropriate utensils and equipment that the children may use safely and hygienically.</li> <li>• Techniques could be practised following a basic recipe to prepare and cook a savoury food product.</li> <li>• 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.</li> <li>• When using a basic dough recipe, explore making different shapes to change the appearance of the</li> </ul>	<p>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?</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Children investigate properties of textiles through investigation e.g. exploring insulating properties, water resistance, wear and strength of textiles.</li> </ul> <p>It would be good to include good examples and poor examples in order to generate WMG.</p> <p><b>Skills development:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Develop skills of sewing textiles by joining the 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 learning how to start and finish off a row of stitches.</li> <li>• 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.</li> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• To define a 'variable' as something that is changeable</li> <li>• To explain that a variable has a name and a value</li> <li>• To experiment with the value of an existing variable</li> <li>• To use a variable in a conditional statement to control the flow of a program</li> <li>• I can plan and test my algorithms and programs, detecting and correcting errors as needed</li> <li>• I can use variables in programs</li> <li>• I can design and write a program that controls or simulates physical systems and sensors</li> <li>• I can design and create a game, app and / or model, incorporating variables and different forms of input and output</li> <li>• I can test, debug and modify a program to improve it</li> </ul>
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	food product e.g. Which shape is most appealing and why?		
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