DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Early Years	**N/A**		
Year 1	**Autumn**	**Topic –** FOOD - *Preparing fruit & veg* - UK originated food/ Northern delicacies – fruit kebabs (Science link – Plants) **Rationale…** This unit will be the first unit of Food and Nutrition in KS1, therefore the focus is on foods the children will already know of (maybe introducing some new). It is vital that children learn how to use techniques such as cutting, peeling and grating correctly and safely. Throughout this unit children will learn about basic safety and hygiene. They will also learn about the benefits of fruit and vegetables, knowing that everyone should eat at least 5 portions of fruit or vegetables daily. The children will have the chance to prepare a simple dish safely and hygienically, without using a heat source. Following the principles their fruit kebab will be for a specific user (themselves) and will allow children to make their own decisions by allowing them to be creative in what they use or how they design it. They will learn that all foods come from plants or animals. This could be used as a project for a parent workshop. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	ELG - Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. Design • Say whether product is for themselves or other users. • Describe what their product is for. • Generate ideas by drawing on own experience. • Model ideas by exploring different components (fruits) Make • Follow the procedures for safety and hygiene. • Use a range of food ingredients (different fruits) Evaluate • Talk about their design ideas and what they are making. Technical Knowledge Food ingredients should be combined according to their sensory characteristics.

DT
Curriculum Rationale

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	Spring	**Topic –** MECHANISMS - *Sliders and levers* – Moving pictures **Rationale…** This is the first mechanisms unit in KS1 and as such, makes use of something with which the children are already familiar from Early Years – exploring a variety of materials and techniques. Throughout this unit, the children will gain an understanding of how to make things move. They will use simple sliders, levers or wheels to create a moving picture. The children will carry out research on simple sliders and levers in different contexts and will have activities to make lever mechanisms in the provision so the children could research in play to learn time too. A simple brief will be decided and followed to create the moving picture using a mechanism (sliders/ levers or wheels). Mechanisms will be further built upon in years 2, 4 and 6 (4 and 6 adding a system in – mechanical systems).	ELG - They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Design • Use simple design criteria to help develop their ideas • Describe what their products are for • Say how their products will work Make • Use a range of materials and components, including construction materials and kits and mechanical components • Measure, mark out, cut and shape materials and components • Select from a range of materials and components. Evaluate • Talk about their design ideas and what they are making Technical Knowledge The movement of simple mechanisms such as levers and sliders.
	Summer	**Topic –** STRUCTURES – Free standing structures – playground equipment (Science link – materials) **Rationale…** Following on from the previous unit, children will be becoming familiar in designing, making and evaluating a purposeful product for a specific user. The unit ties in with the science theme of 'materials'. By following the DT principles, the children will design, make and evaluate a purposeful product that they have had experience from already in their life. It will be for a specific user (maybe themselves) and have an authenticity about it. They will spend time designing a structure with pictures or words and researching a free-standing structure. They will investigate how to make their structures stronger. When evaluating, the children can check their product against a simple design brief and discuss whether they would make any changes to their finished structure. They can test it out using a teddy or mini figure. This structure unit will be built upon further in Years 3 and 5 throughout the school.	ELG - They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Design • Say whether their products are for themselves or other users. • State what products they are designing and making. • Develop ideas by talking and drawing. Make • Assemble, join and combine materials and components • Use finishing techniques, including those from art and design • Select from a range of tools and equipment. Evaluate • Talk about their design ideas and what they are making Technical Knowledge How free standing structures can be made stronger, stiffer and more stable.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Year 2	**Autumn**	**Topic –** FOOD – Bread (History link – G.F.O.L.) **Rationale…** This food and nutrition unit links with the history theme of 'Great Fire of London'. Within this, the children will learn that food has to be farmed, grown elsewhere or caught. The children will then use ingredients made from crops grown to create their bread for a purpose or specific user. While following the design, make, evaluate process, the children will build upon their schema of food and nutrition looking back at safety and hygiene. Throughout the process, the children will be researching different types of the product and making decisions that will give their design authenticity.	Y1 – techniques, basic safety and hygiene, benefits of fruit & veg. Design • Use knowledge of existing products to come up with ideas. • Say how they will make their product suitable for intended user. • Use simple design criteria to help develop their ideas. Make • Follow the procedures for safety and hygiene. • Use a range of food ingredients • Measure, mark out, cut out and shape materials and components Evaluate • Make simple judgements about their product and idea against design criteria. Technical Knowledge • Food ingredients should be combined according to their sensory characteristics. Correct technical vocab.
	Spring	**Topic –** TEXTILES - *Templates and joining techniques* - Puppet **Rationale…** This is the first textiles unit the children will have been taught. Due to this, the focus will be on introducing the children to the skill of sewing and lots of practising of this skill. Focusing on a running stitch. They will start with plastic needles and move to metal ones. To create their puppet the children will research different puppets and materials then design their own accordingly. After mastering the skill, the children will create a puppet using suitable material following their design brief. During this project, the children will be innovating and making design decisions. This could be used as a project for a parent workshop. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	Design • Use ICT to develop and communicate their idea. • State what products they are designing and making. • Model ideas – making templates and practising. Make • Plan by suggesting what to do next. • Use a range of textiles. • Assemble, join and combine materials and components • Use finishing techniques. Evaluate • Make simple judgements about their product and idea against design criteria. • Suggest how product can be improved Technical Knowledge • That a 3d textiles product can be assembled from 2 identical fabric shapes. Correct technical vocab.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer	**Topic -** MECHANISMS - *Wheels and axels* – Vehicle **Rationale…** This unit links with the history theme of 'Florence Nightingale or could be a stand-alone unit. Recapping the children's knowledge from year 1 about how things move, they will build upon this schema and specifically focus on wheels and axels. Following the DT principles, there is a specific user (Florence N) so children will have to complete research to consider her needs, interests or preferences. The children will take inspiration from vehicles already made and specifically any vehicles that may be used to voyage/ explore the most. This will lead into a design brief that the children will follow to create their own functional vehicle.	Y1 – simple mechanisms – levers and sliders Design • Work confidently within a range of contexts – imaginary. • Say how their product will work. • Use simple design criteria to help develop ideas. • Model ideas by exploring materials, components and construction kits – make mock ups. Make • Select from a range of tools and equipment • Select from a range of materials and components according to characteristics. • Use a range of mechanical components. • Assemble, join and combine materials and components Evaluate • Make simple judgements about their product and idea against design criteria. • Suggest how product can be improved Technical Knowledge • The movement of simple mechanisms such as wheels and axels. • The simple working characteristics of materials and components. Correct technical vocab.
Year 3	**Autumn 1**	**Topic –** STRUCTURES – shell structure – *CAD – sustainable packaging* **Rationale…** This first unit in KS2 will build on the children's schema they started in year 1 with structures where they assembled a simple frame. This unit is linked in with the next DT unit food in that the children will design, innovate and create a sustainable packet for their biscuits. They will have to follow a design brief that ensures the product is functional and purposeful. Their product will eventually have authenticity. A discussion will be had about which materials to use. During the design process, the children can use computer designing. It will be their first time at trying to computer design something.	Y1 –assemble, join and combine materials. Design • Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Use computer aided design to develop and communicate ideas. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Order the main stages of making. • Measure, mark out, cut and shape materials with some accuracy. • Assemble, join, combine materials with some accuracy. • Apply a range of finishing techniques (art) with some accuracy. Evaluate • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. Technical Knowledge How to make strong, stiff shell structures.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Spring	**Topic –** FOOD - *Healthy & varied diet* – healthy biscuit (stand-alone) **Rationale…** Following on from KS1 Food and Nutrition units, this particular unit seems to tie all the children's previous knowledge together. They will recap the techniques used with food and what foods are healthy for them. Using this knowledge, they will build upon it by looking at a varied diet alongside a healthy one. The children will create a healthy alternative biscuit for themselves. They will design and innovate their biscuit by researching and deciding what is healthy for them. In addition, their design brief will state that the foods chosen will have to be suitable to be cooked in a biscuit – this may lead to the children creating their own design brief. To create their design the children will use a heat source. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	All previous years - All techniques and understanding of different foods. Design • Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Gather information about the needs and wants of particular individuals and groups. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Order the main stages of making. • Follow procedures for safety and hygiene. Evaluate • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. Technical Knowledge That food ingredients can be fresh, pre-cooked and processed.
	Summer	**Topic –** TEXTILES – Roman Bulla purse (History link) **Rationale…** This unit is linked to the History theme of 'Romans'. As the children will have only completed one textiles unit in KS1, they need to firstly focus on mastering the skill. Recapping a running stitch then building on this to look at a back stitch. This will give the children the opportunity to choose which stitch they prefer when they come to design and make their Roman coin holder. Following a design criterion, the children will research and then decide which material will fit the specification best for the user. Children will have the opportunity to innovate their design to make it the best possible design to fit design brief.	Y2 – running stitch and use of materials. Design • Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Indicate the design features of their product that will appeal to users. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Order the main stages of making. • Measure, mark out, cut and shape materials with some accuracy. Evaluate • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. Technical Knowledge • That a single fabric shape can be used to make a 3D textiles product. That materials have both functional properties and aesthetic qualities

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Year 4	**Autumn**	**Topic -** MECHANICAL SYSTEMS - *Levers and linkages* **Rationale…** This unit will be the first Mechanical systems unit of KS2. The children will use their previous taught skills/ knowledge from KS1 about how things move and build upon that. The children will start by researching levers and linkages to design and create a moving story. They will incorporate ICT to design and create their character and story. The children will ensure their character functions. This unit is linked to the core txt being used. Within this unit, the design brief will identify the specific user to ensure that the product created is purposeful.	Y1 and Y2 –Sliders, levers, wheels and axles. Design • Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Use computer-aided design to develop and communicate their ideas. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Order the main stages of making. • Measure, mark out, cut and shape materials with some accuracy. • Assemble, join, combine materials with some accuracy. • Apply a range of finishing techniques (art) with some accuracy. Evaluate • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. Technical Knowledge • How mechanical systems such as levers and linkages create movement. How to program a computer to control their products.
	Spring	**Topic –** FOOD - *Healthy & varied diet* – breakfast muffins – **Rationale…** As the children will have completed their y3 Food module the year before, they will continue to look and learn about a balanced, healthy diet. The children will design and make a healthy breakfast muffin for a specific user (could be themselves) including all the skills they have previously mastered as well as adding in new techniques. The children's design brief will state they need to use a heat source so baking their muffin. As muffins are predominantly seen as 'unhealthy' and a 'sweet treat' it will be the children's task to research ingredients to use for a healthy, breakfast muffin. This will all feed into their design decisions and the functionality of the unit. The children will learn that different food and drink contain different substances – nutrients, water and fibre – that need for health and this will help them make their decisions	All previous years - All techniques and understanding of different foods. Design • Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Share and clarify ideas through discussion. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Order the main stages of making. • Follow procedures for safety and hygiene. Evaluate • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. Technical Knowledge That food ingredients can be fresh, pre – cooked and processed.
	Summer		Design

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
		Topic - ELECTRICAL SYSTEMS - *Simple switch* - electricity (motion or light) – Torch (Science link) CAD **Rationale…** This will be the first time children have focused on the electrical systems side of DT. They will learn the skills and design make and evaluate their product alongside learning all about electricity in their Science lessons. During this unit of work, the children will create a simple electrical circuit with a simple switch to turn their touch on and off. While making design decisions, they will have to research and decide which materials will work best for the outside of the torch. They children will design the outer casing of the torch on CAD. The children need to ensure authenticity and functionality for this particular product and their specific user's likes – e.g., colours or patterns on casing. This could be used as a project for a parent workshop. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	• Describe the purpose of the product. • Develop own design criteria and use these to inform ideas. • Generate realistic ideas, focusing on needs of user. • Use annotated sketches, cross-sectional drawings and exploded diagrams to develop & communicate ideas. <u>Make</u> • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. • Order the main stages of making. • Measure, mark out, cut and shape materials with some accuracy. • Assemble, join, combine materials with some accuracy. • Apply a range of finishing techniques (art) with some accuracy. <u>Evaluate</u> • Identify the strengths and areas for development in their ideas and products. • Refer to their design criteria as they design and make & use it to evaluate completed product. <u>Technical Knowledge</u> • How simple electric circuits and components can be used to create functional products. • How to use learning from Science to help design and make products that work.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Year 5	**Autumn**	**Topic -** STRUCTURES - *Frame structures* – mobile phone holder (Stand-alone) **Rationale…** Encompassing the skills the children will have learned over KS1 and early KS2 they will create a 3D mobile phone holder framework. Firstly, they will focus on the woodwork skills and recap how to handle materials and tools safely. Their structure will be designed and created for a specific use and that will be innovated and created through the design criteria. Design decisions will be made throughout and they will feed into the creating of the final structure. The children will recap how to stiffen structures and build on this schema by focusing on reinforcing their mobile phone holder structure to ensure it is a strong 3D structure.	Y1 –assemble, join and combine materials & Y3 – Create a wooden structure Design • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Model their ideas using prototypes and pattern pieces. • Carry out research using surveys, interviews questionnaires, and web based resources. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. • Formulate a step-by-step plan as a guide to making. • Accurately measure, mark out, cut and shape materials. • Accurately assemble, join, combine materials. • Accurately apply a range of finishing techniques (art). Evaluate • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Technical Knowledge • How to reinforce and strengthen a 3Dframework. That material has both functional properties and aesthetic qualities.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Spring	**Topic –** FOOD - *Celebrating culture & seasonality* – 'bait' pastries (History link – Coal mining) **Rationale…** This Food and Nutrition unit moves away from Healthy diet and starts looking at celebrating culture and seasonality. Relating this unit to the History theme 'Coal Mining, the children will focus on 'bait' (pastries) that were used as substantial food for men/ women going out to coal mine for the day. The children will research the ingredients in them and they will build upon schemas of baking from previous learning. They will create their own design criteria for a specific user and ensuring the function and purpose stays the same. They will innovate and evaluate their design along the way and create a final product. The children will learn that recipes can be adapted by adding or substituting one or more ingredients.	All previous years - All techniques and understanding of different foods. Design • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Carry out research using surveys, interviews questionnaires, and web based resources. • How to use learning from mathematics to help design and make products that work. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Formulate a step-by-step plan as a guide to making. • Follow procedures for safety and hygiene. Evaluate • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Technical Knowledge That a recipe can be adapted by adding or substituting one or more ingredients.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer	**Topic -** ELECTRICAL SYSTEMS - *Complex switches, programme and monitoring* - Battery powered vehicle (History link - trade/ industry) **Rationale…** This electrical systems unit will build upon the children's schema they will have created in the previous year group. As the children will know how to put a simple electrical circuit together, they will start to make it more complex. Following the principles, they will ensure that there is purpose and function to their battery operated vehicle. The children will create this for a specific user and ensure appropriate design decisions are made for their own design brief. To create their design, the children should use computer aided design to create the shell of their vehicle. This could be used as a project for a parent workshop. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	Y4 – Simple circuits and switches. Design • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Use computer aided design to develop and communicate ideas. • Carry out research using surveys, interviews questionnaires, and web based resources. • How to use learning from Science to help design and make products that work. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. • Formulate a step-by-step plan as a guide to making. • Accurately measure, mark out, cut and shape materials. • Accurately assemble, join, combine materials. • Accurately apply a range of finishing techniques (art). Evaluate • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Technical Knowledge • How more complex electrical circuits and components can be used to create functional products. How to program a computer to control their products.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Year 6	**Autumn**	**Topic –** FOOD - *Celebrating cultures & seasonality – WW2 - Rations* **Rationale…** As this is the last unit of Food and Nutrition the children will complete in Primary DT, they will include all skills from their previous years Food units. Within this unit, the children will research, plan, make and evaluate a meal with a set amount of ingredients – ration like to relate back to WW2. Encompassing all their previous skills, the children will use techniques, a source of heat and adding or substituting ingredients. They will create their own design brief to a specific user and then innovate their creation to fit. The children will ensure that there is a purpose and function to their meal. They will start to consider different constraints such as time, resources and cost. *Ready Steady Cook!*	<u>All previous years</u> - All techniques and understanding of different foods. <u>Design</u> • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Carry out research using surveys, interviews questionnaires, and web based resources. • Share and clarify ideas through discussion. • How to use learning from mathematics to help design and make products that work. <u>Make</u> • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Formulate a step-by-step plan as a guide to making. • Follow procedures for safety and hygiene. • Demonstrate resourcefulness when tackling practical problems. <u>Evaluate</u> • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. <u>Technical Knowledge</u> That a recipe can be adapted by adding or substituting one or more ingredients.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Spring	**Topic –** TEXTILES - *Combining different fabrics –Computer design* — Kit bag/ first aid bag - (History link - Medicine and disease) **Rationale…** As this is the last textiles unit the children will complete in primary DT, the T needs to ensure the children are familiar with the different stitches (taught throughout the Key Stages). The children will understand that they have used the same fabric through previous units, however in this unit they will learn that a 3D textiles product can be made from different fabrics or a combination of different fabrics. This unit of making a kit/ first aid bag relates to the History theme 'Medicine and Disease.' By now, the children should be able to create a design brief and follow that to create their face mask for a specific user. They will draw on experiences they may have had with certain fabrics or bags they may have owned. They will consider different constraints (or constraints that could have been set over time linking with medicine and disease) such as time, resources and cost. Innovating their product and ensuring that the product has authenticity will drive their final designs and creations of a kit/ first aid bag. This could be used as a project for a parent workshop. Children could work on the project in school and at home then parents would be invited in to help with creating final design.	Y2 & Y3 – Different stitches and creating a 3D product. Design • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Carry out research using surveys, interviews questionnaires, and web based resources. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Formulate a step-by-step plan as a guide to making. Evaluate • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Technical Knowledge • That a 3D textiles product can be made from a combination of fabric shapes. That materials have both functional properties and aesthetic qualities.

DT
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer	**Topic -** MECHANICAL SYSTEMS - *Pulleys or gears* — Fairground ride for younger chn to use (toy) (Maths link) **Rationale…** As this is the last unit of Mechanical systems in Primary DT, the children will draw upon all their previous learning of mechanical systems – Y1, 2 & 4. The specific user for this will be younger children (Reception or Y1) The children will focus on pulleys and gears – researching and ensuring that that deign a functional purposeful fairground ride for the user to access and use. Alongside this, the children will make use of their previous knowledge of structures. During the designing stage, computer technology should be used and the design decisions will impact on the final design. To gather specific information to feed into their design brief, the children need to collect data from their users. The evaluation stage should also include information from the user.	Y1, Y2 and Y4 –Sliders, levers, wheels, axles and linkages. Design • Describe the purpose of the product. • Explain how particular parts of their product work • Identify needs, wants, preferences and values of particular individuals or groups. • Generate innovative ideas, drawing on research. • Model their ideas using prototypes and pattern pieces. • Carry out research using surveys, interviews questionnaires, and web based resources. Make • Select tools and equipment suitable for the tasks. • Select materials and components suitable for the task. • Explain their choice of materials and components according to functional properties and aesthetic qualities. • Formulate a step-by-step plan as a guide to making. • Accurately measure, mark out, cut and shape materials. • Accurately assemble, join, combine materials. Evaluate • Consider the views of others, including intended users to improve work • Critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make. Technical Knowledge How mechanical systems such as cams or pulleys and gears can create movement.