Hopton Design & Technology Curriculum

Key concepts: cultural understanding, innovation, design, construction, critical evaluation

Key Threads:

Locality	Significant People	Human Influence	The Wider World	Comparison	Investigation	British Values

Area of Design and Technology Strands:

Cooking & Nutrition	Textiles	Electrical Systems	Mechanisms	Structures	Computer Controlled Products

EYFS	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
(F1) **Throughout the year across all topics**	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, for example: glue and masking tape for sticking pieces of scrap materials onto old cardboard boxes, hammers and nails, glue guns, paperclips and fasteners. Use one-handed tools and equipment, for example, making snips in paper with scissors. Learn how to use a hole punch and stapler. Listen and understand what children want to create before offering suggestions. Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park, for example a house for Goldilocks. Offer opportunities to explore scale, create a large house for big bear, a smaller house for baby bear, using small and big boxes. Food - Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - having a good sleep routine. Follow recipes to combine ingredients to make buns, biscuits, fruits smoothies and kebabs. Consider the appearance and explore different ways of decorating. Know which foods are treats and which are healthy.	Encourage children to explain what they like/dislike about their creations. Model suggesting improvements explaining reasons why.

(F2) **Throughout the year across all topics**	Provide children with a range of materials for children to construct with. Encourage them to think about and discuss what they want to make.	Teach children different techniques for joining materials, such as how to use adhesive tape and different sorts of glue. Provide a range of materials and tools and teach children to use them with care and precision. Promote independence, taking care not to introduce too many new things at once. Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills. Group familiar food products e.g. fruit /veg Cut and chop a range of ingredients. Work safely and hygienically. Know about the need for a variety of foods in a diet. Develop a food vocabulary using taste, smell, texture and feel.	Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims.

Year 1 and 2 (Cycle 1)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How do you make a kite that will fly?	*research different types of kites from around the world. Discussing the shapes, styles, materials used. Research kites as a whole – how are they made, what materials are used, how it is held together. ***(British Values – Identity, Community)*** *learn about the characteristics of the materials to be recycled and the components they are using. Why would they use these different materials? Properties of each – strength, versatility etc. *explore ways to join materials – different glues, different tapes – which work best for different materials *describe the purpose and intended user of their	*plan by suggesting what to do next *begin to identify which tools and materials they will need; use vocabulary to name and describe them; explain why they have made these selections *Learn how to work safely and accurately. (***British Values – democracy – working together to find the best solutions)*** *cut and shape materials with developing accuracy *assemble, join and combine materials in order to make their kite. *choose and use appropriate finishing techniques – for example, colouring, collaging, painting…	Start of the unit *evaluate existing products relevant to the unit; exploring: - - what their purpose is - how they work - how and where they are used - what materials are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making, identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying

	product – celebration, children to have fun, festivals. *How can we use recycled materials that would otherwise be thrown away *develop a simple design criteria for a kite made from these materials. *develop their design ideas through discussion, observation, drawing and modelling *make simple drawings and label parts		what worked well and what could be improved
How can I make a healthy fruit cocktail/smoothie?	*explore different fruits and vegetables. *investigate a range of recipes *investigate a range of healthy smoothie products *investigate a range of cookery books *experiment with different combinations of flavours. -how ingredients compliment one another. *describe the purpose and intended user of their product – children / adults – eating healthily *develop a simple recipe combining a number of healthy ingredients *develop their ideas through discussion, observation, drawing and modelling *make simple drawings of equipment needed, foods used and label parts	*plan by suggesting what to do next *begin to identify which tools and materials they will need; use vocabulary to name and describe them; explain why they have made these selections *learn how to work safely and accurately *learn how to use kitchen utensils and equipment safely. *learn about hygienic food preparation *use a variety of techniques such as chopping, peeling, blending, boiling, liquidising. *use finishing techniques to improve the appearance of their smoothie/cocktail.	Start of the unit *evaluate existing products relevant to the units (fruit cocktails/ shakes readily available in shops/ recipe books) : - - what their purpose is - how they work - how and where they are used - what materials/foods are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making, identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying what worked well and what could be improved
How can we make a vehicle out of wood?	*explore a range of toy vehicles for background information- components, parts (moving and fixed). How the vehicles are put together, what different components they have. Have the children ever played with large toy vehicles? Look at a range of vehicles for design- car, lorry, bus etc. ***(British Values – Identity, Community)*** *describe the purpose and intended user of their product –an attractive pictorial representation of a vehicle. *develop a simple design criteria for a vehicle template *develop their design ideas through discussion, observation, drawing and modelling, using ICT where appropriate *make simple drawings and label parts	*plan by suggesting what to do next *begin to select tools and materials; use vocabulary to name and describe them; explain why they have made these selections *learn how to use a saw and scissors safely and appropriately. *use basic sawing techniques *cut, shape and join wood to make a simple 'chassis for a vehicle'	Start of the unit *evaluate existing products- vehicles exploring: - what their purpose is - how they work - how and where they are used - what materials are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making, identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying what worked well and what could

Year 1 and 2 (Cycle 2)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How do you make a toy town? **(Structures)**	*research different types of house models made from lego/knex etc. needed to make a town model. Research Mirfield as a town – what does it contain? Shops/roads/canal etc. ***(British Values – Identity, Community)*** *learn about the characteristics of the materials to be recycled and the components they are using. Why would they use these different materials? Properties of each – strength, versatility etc. *explore ways to join materials – different glues, different tapes – which work best for different materials *describe the purpose and intended user of their product – a model town for young children to enjoy which uses polystyrene blocks but may use recycled materials that would otherwise be thrown away *develop a simple design criteria for a toy town made from these materials *develop their design ideas through discussion, observation, drawing and modelling *make simple drawings and label parts	*plan by suggesting what to do next *begin to identify which tools and materials they will need; use vocabulary to name and describe them; explain why they have made these selections (***British Values – democracy – working together to find the best solutions)*** *cut and shape materials with developing accuracy *assemble, join and combine materials in order to make their toy town. *choose and use appropriate finishing techniques – for example, colouring, collaging, painting…	Start of the unit *evaluate existing products relevant to the units (toy town models with moving parts exploring: - - what their purpose is - how they work - how and where they are used - what materials are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making, identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying what worked well and what could be improved
How can card move? **Moveable scenes/cards** **(levers and sliders)**	*explore the mechanisms around movable scenes/cards. *investigate a range of moveable designs – what do they often feature? *investigate a range of books with moving parts *learn how to construct moving parts such as levers and sliders *learn about the characteristics of the materials and components they are using *describe the purpose and intended user of their product – a scene/card with moving parts *develop a simple design criteria for a moveable scene/card with moving parts *develop their design ideas through discussion, observation, drawing and modelling *make simple drawings and label parts	*plan by suggesting what to do next *begin to identify which tools and materials they will need; use vocabulary to name and describe them; explain why they have made these selections *cut materials (mostly cardboard) with developing accuracy *learn how to use components such as split pins *assemble, join and combine materials in order to make a picture scene/card with moving parts *choose and use appropriate finishing techniques – for example, colouring, collaging, painting…	Start of the unit *evaluate existing products relevant to the units (cards/books with moving parts exploring: - - what their purpose is - how they work - how and where they are used - what materials are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making, identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying what worked well and what could be improved
How can we make characters out of fabric? **Hand Puppets** **(Link to History – Seaside)**	*explore a range of seaside 'Punch and Judy' style hand puppets for background information. Have the children ever seen these at parties? At the seaside? Look at a range of animal puppets for design ***(British Values – Identity, Community)*** *describe the purpose and intended user of their product	*plan by suggesting what to do next *begin to select tools and materials; use vocabulary to name and describe them; explain why they have made these selections *learn how to use needles and scissors safely and appropriately *cut, shape and join fabric to make a simple 'animal	Start of the unit *evaluate existing products hand puppets exploring: - what their purpose is - how they work - how and where they are used - what materials are used - what they like and dislike about them During the unit *talk about their design ideas and what they are making,

	–an attractive pictorial representation of an animal using textiles *develop a simple design criteria for an animal template *develop their design ideas through discussion, observation, drawing and modelling, using ICT where appropriate *make simple drawings and label parts	puppet' *use basic sewing techniques	identifying strengths and possible changes they might make End of the unit *evaluate their product against their design criteria, saying what worked well and what could

Year 3 and 4 (Cycle 1)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How do you use materials to create an Anglo Saxon house?	*explore a range of Anglo Saxon house designs; the features, their purpose. *investigate how the houses were structurally built. *describe the purpose of their product - make a house that is structurally secure. * use their research to begin to develop their own design criteria for a home *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate *make design decisions that take account of the availability of resources * Create a discussion about how to secure the wooden elements together. *make labelled drawings from different views showing specific features, indicating the features that such as the thatched roof, wooden walls.	*plan the order of the main stages of making the houses. *select appropriate tools and techniques for making their Anglo Saxon houses, explaining their choices – link to what was used in the olden days and now. * Use a variety of materials to create an Anglo Saxon house- clay, wood, straw, *select materials, using scientific knowledge about the properties of materials to inform their choice of structure. *measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques. *join and combine materials and components accurately in temporary and permanent ways (binding, gluing) Consider the following: How does the structure affect the roof of the home? Does it matter how you join the wood to have a structure? How important is it to have accurate measuring and cutting skills? Does it matter where you position the windows/ doors? What shape is the strongest and most solid? Why do you think it has a more solid structure? Is there any way in which we can ensure the structure is securely sound once built? – are the corners robust?	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own designs During the units *consider how well their design is meeting their intended purpose by referring to the design criteria and decide whether they need to make any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests.
Can I make a box monster with mechanical moving parts?	*look at a variety of objects that use air to make them work *eg recorder, whistle, bicycle pump, balloon, inflatable swimming aids, foot pump for inflating an air bed, coiled party blowers.* *investigate and test different ways a pneumatic system works. *describe the purpose of their product and intended user. * use their research to begin to develop their own design criteria for moving system. *What does the air do? How has it been used in the design of these products?* *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate *make labelled drawings from different views showing specific features, indicating the features that will move from the system.	*plan the order of the main stages of making *select appropriate tools and techniques for making their product, explaining their choices *select materials, using scientific knowledge about the properties of materials to inform their choice *be taught how to use a pneumatic system properly. *join and combine materials and components accurately in temporary and permanent ways. *use finishing techniques to ensure the aesthetic appeal of their product • are familiar with techniques for making simple pneumatic systems	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own designs During the units *consider how well their design is meeting their intended purpose by referring to the design

	(British Values – democracy – freedom of choice) *make design decisions that take account of the availability of resources		criteria and decide whether they need to make any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests
What makes a healthy pizza? **(Link to Science – Healthy Eating)**	`*explore a range of recipes, considering their nutritional value and their place within a balanced diet. *investigate possible ingredients, considering their nutritional value; whether they have been grown (fruit/veg) or reared (meat); and how combinations of ingredients may complement each other, people's likes and dislikes (***British Values –right to choice to stay healthy)*** *describe the purpose of their meal *Research where pizzas come from. *use their research to begin to develop their own design criteria for a healthy meal. *use annotated sketches to develop their ideas, indicating why particular ingredients have been chosen	*plan the order of the main stages of working – write a recipe/ ingredients needed/instructions on how to make a pizza. *select utensils/equipment , techniques and ingredients for making their meal, explaining their choices *learn how to work safely and accurately with a range of utensils *learn about hygienic food preparation and storage *prepare and cook *use a range of techniques such as peeling, chopping, slicing, grating and liquidising *use finishing techniques to improve the appearance of their meal.	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why ingredients have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own Designs During the units *consider how well their design is meeting their intended purpose by referring to the design criteria and decide whether they need to make any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests (taste)

Year 3 and 4 (Cycle 2)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How do you use materials to create a theatre? **Puppet Theatre – (structure with curtains and lights)**	*explore a range of theatre designs: *investigate how theatres in the past were built and what was used to part the curtains. *describe the purpose of their product - make a theatre which can be used for puppet performances. – opening the curtains ready for a performance. - make it easier to move heavy objects from one place to another. * use their research to begin to develop their own design criteria for a stage *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate *make design decisions that take account of the availability of resources *make labelled drawings from different views showing specific features, indicating the features that will appeal to intended users and how particular parts work. * Create a discussion about how to secure the wooden elements together.	*plan the order of the main stages of making *select appropriate tools and techniques for making their theatre stage, explaining their choices – link to what was used in the olden days and now. *select materials, using scientific knowledge about the properties of materials to inform their choice of structure, pulley system. *measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques *join and combine materials and components accurately in temporary and permanent ways (binding, gluing) Consider the following: How does the pulley make it easier to open and close the theatre curtains? Does it matter how you join the wood to have a secure stage? How important is it to have accurate measuring and cutting skills? Does it matter where you position the pulley system for the curtains? What shape is the strongest and most solid? Why do you think it has a more solid structure? Is there any way in which we can ensure the structure is securely sound once built? – are the corners robust?	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own designs During the units *consider how well their design is meeting their intended purpose by referring to the design criteria and decide whether they need to make any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests.
How can I keep my teddy's head warm? **Hats for Teddies (Textiles)**	*compare a range of hat designs: woolen, fabric, felt hats *investigate the sewing processes *describe the purpose of their product – provide warmth - provide protection - fashionable * use their research to begin to develop their own design criteria for a hat *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate ***(British Values – democracy – freedom of choice)*** *make design decisions that take account of the availability of resources *make labelled drawings from different views showing specific features, indicating the features that will appeal to intended users and how particular parts work	*plan the order of the main stages of making *select appropriate tools and techniques for making their product, explaining their choices *select materials, using scientific knowledge about the properties of materials to inform their choice (fabric) *be taught how to sew effectively *measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques *join and combine materials and components accurately in temporary and permanent ways (stitching, gluing) *use finishing techniques to ensure the aesthetic appeal of their product (quality of sewing and edging and securing of stitches)	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own designs During the units *consider how well their design is meeting their intended purpose by referring to the design criteria and decide whether they need to make

			any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests
What makes a healthy recipe? **Healthy Meals (Link to Science – Healthy Eating)**	`*explore a range of recipes, considering their nutritional value and their place within a balanced diet *investigate possible ingredients, considering their nutritional value; whether they have been grown (fruit/veg) or reared (meat); and how combinations of ingredients may complement each other, people's likes and dislikes ***(British Values –right to choice to stay healthy)*** *describe the purpose of their meal *use their research to begin to develop their own design criteria for a healthy meal. *use annotated sketches to develop their ideas, indicating why particular ingredients have been chosen	*plan the order of the main stages of working – write a recipe *select utensils/equipment , techniques and ingredients for making their meal, explaining their choices *learn how to work safely and accurately with a range of utensils *learn about hygienic food preparation and storage *prepare and cook *use a range of techniques such as peeling, chopping, slicing, grating and liquidising *use finishing techniques to improve the appearance of their meal.	Start of the units *evaluate products relevant to the units, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused *identify criteria that can be used for their own designs During the units *consider how well their design is meeting their intended purpose by referring to the design criteria and decide whether they need to make any changes End of the units *evaluate their product against the original design criteria, carrying out appropriate tests

Year 5 and 6 (cycle 1)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How can I make a cushion fit for an Islamic King? (Link to Early Islamic Civilisation)	*investigate cushions: how and why they were designed and made, the variety of designs available *conduct research, including surveys of other pupils, to discover the popularity of different colours/designs/sizes ***(British Values – democracy/respect for choices)*** *generate innovative ideas and identify a purpose for their product – a well-made cushion which reflects Islamic trends – link to history ***(British Values – respect for multi-faith and culture)*** *use their research to write their own design criteria for a cushion *make labelled drawings, including exploded and cross sectional diagrams, indicating the features that will appeal to intended users and how particular parts work *through discussion, explore, develop and communicate design proposals using ideas of Islamic art by modelling ideas, using ICT where appropriate • make design decisions, taking account of constraints such as time, resources and cost	*develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail *be taught how to use a pattern *be taught a variety of stitches *select appropriate tools, and techniques (types of stitches), explaining choices *use equipment safely and accurately *measure and mark out accurately *make modifications, where necessary *cut and join with accuracy to ensure a good-quality finish to the cushion.	Start of the unit *evaluate products -how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused - how much products cost to make - how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose *identify criteria that can be used for their own designs During the units *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make End of the units *evaluate their products against the original design specification, carrying out appropriate tests
How can I make a meal using war time rations? (Link to WW2)	*explore ration recipes and examples of wartime dishes (different types of main meals); where and when the ingredients originated from. Why did rationing recipes come about? Impact of war. Children ask their grandparents what they remember eating? Do they remember ration books and stamps (rationing went beyond the end of the war) ***(British Values – identity)*** *generate innovative ideas through discussion and identify a purpose for their dish (to provide a meal for a small family during wartime *investigate potential ingredients, considering whether they were available during the war, their nutritional value; whether they are grown (grains/pusles/fruit/veg), reared (meat/poultry)or caught (fish); and where they are produced (the UK, Europe or the wider world)	*develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail (write a recipe) *select appropriate utensils/equipment and techniques, explaining choices *select ingredients, using scientific knowledge about the properties of materials to inform their choice *use skills in using different tools and equipment safely and accurately *weigh and measure accurately (time, dry ingredients, liquids) *apply the rules for basic food hygiene and other safe practices e.g. hazards relating to the use of ovens *use finishing techniques such as glazing the crust, serving with garnishes	*evaluate recipes *analysing: - how well recipes have been designed and made * why ingredients have been chosen - what methods of cooking have been used - how well the recipes achieve their purposes * how well products meet user needs and wants - how much the recipes cost to make (what ration stamps were required) * how innovative the recipes are *identify criteria that can be used for their own designs *critically evaluate the quality of the design, manufacture and fitness for purpose of their recipes as they design and make *evaluate their cooking products against the original design specification, carrying out appropriate tests

	*investigate how seasons may affect the food available and how food is processed into ingredients that can be eaten or used in cooking * consider how to adapt a recipe to change the appearance, taste, texture or aroma * carry out research, using surveys, interviews, questionnaires and web-based resources * identify the needs, wants, preferences and values of particular individuals and groups that their dish will be cooked for *use their research to write their own design criteria for a wartime recipe *make labelled drawings, including exploded and cross-sectional diagrams, indicating the features that will appeal to intended users and how particular parts work (Bake Off examples) *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate • make design decisions, taking account of constraints such as time, resources and cost		– taste product and evaluate taste, texture, appearance.
What game would Tesla have made? (Challenge) (Link to Science – Electricity)	*explore electrical games, eg, 'Operation', investigating how they work *interview peers about what makes a good board/electrical game (market research) with a burglar alarm component. ***(British Values – democracy/respect for choices)*** *generate innovative ideas through discussion and identify a purpose for their product – an electrical game – a challenge set by Tesla himself!…. *apply scientific learning about electrical circuits and components *use their research to write their own design criteria for an electrical game *make labelled drawings, including exploded and cross sectional diagrams, indicating the features that will appeal to intended users and how particular parts work *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate • make design decisions, taking account of constraints such as time, resources and cost	*develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail *select appropriate tools and techniques, explaining choices *select materials, using scientific knowledge about the properties of materials to inform their choice *use skills in using different tools and equipment safely and accurately *measure and mark out accurately *cut and join with accuracy to ensure a good-quality finish to the game	*evaluate electrical games, analysing: - how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused - how much products cost to make - how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose *identify criteria that can be used for their own designs During the units *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make End of the units *evaluate their products against the original design specification, carrying out appropriate tests Pizza – taste product and evaluate taste, texture, appearance Computer-controlled product– Electrical game – play games with peers, obtain feedback from peers.

Year 5 and 6 (Cycle 2)	**Design** Understanding contexts, users and purposes Developing and communicating ideas	**Make** Planning Developing practical skills and techniques	**Evaluate** Evaluating existing products Evaluating their own ideas and products
How can I make a toy car? (Link to Science Forces)	*explore and learn about how cams (a cam attached to a crankshaft which rotates to create movement) *identify a purpose for their product and generate innovative ideas – a moving toy for a child in EYFS *use their research including interviewing children in Foundation Stage to write their own design criteria for a moving toy for an EYFS child ***(British Values – democracy/ respect for choices)*** *make labelled drawings, including exploded and cross sectional diagrams, indicating the features that will appeal to intended users and how particular parts work *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate *make design decisions, taking account of constraints such as time, resources and cost	*develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail *select appropriate tools (saws, glue guns), and techniques, explaining choices *select materials, using scientific knowledge about the properties of materials to inform their choice *use different tools and equipment safely and accurately *measure and mark out accurately *make modifications, where necessary *cut and join with accuracy to ensure a good-quality finish to the model	Start of the unit *evaluate products -how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused - how much products cost to make - how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose *identify criteria that can be used for their own designs During the units *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make End of the units *evaluate their products against the original design specification, carrying out appropriate tests
How can I make the strongest bridge? **Building Bridges -structures (Link to North America)**	*research different types of bridges focusing on some famous bridges in North America (Brooklyn Bridge, Golden Gate Bridge, New River Gorge Bridge (internet pictures) *investigate and compare different structural features of bridges – why were each of these bridges built? *describe the purpose of their product – a bridge to span a specified length or carry a certain weight *plan the order of the main stages of making *select tools and materials, using scientific knowledge about the properties of materials to inform their choice *learn about ways to strengthen structures *select techniques for cutting, joining and strengthening Strand Structures *use their research to begin to develop their own design criteria for a bridge	*develop a clear idea of what has to be done, planning how to use materials, equipment and processes, and suggesting alternative methods of making if the first attempts fail *select appropriate tools and techniques, explaining choices *use skills in using different tools and equipment safely and accurately *measure and mark out accurately *cut and join with accuracy to ensure a good-quality finish *learn how to work safely and accurately with a range of simple tools *use finishing techniques to improve the appearance of their product using a range of equipment	Start of the unit *evaluate products -how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused - how much products cost to make - how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose

	*through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate *make design decisions that take account of the availability of resources *use annotated sketches to develop their ideas, indicating the features that will appeal to intended users and how particular parts work		*identify criteria that can be used for their own designs During the units *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make End of the units *evaluate their products against the original design specification, carrying out appropriate tests
How can I move around on Mars? **Computer Controlled Products** **(Link to Science - Building a computer controlled space buggy)**	*explore a range of computer-controlled products used in real-life contexts, for example: automatic gates, the Mars Rover, Alexa, use of Hive app on the phone to control heating etc *investigate how computer-controlled products work and how different outputs can be achieved using Lego WeDo *describe the purpose of their product – *use their research to begin to develop their own design criteria for a computer-controlled Lego model *through discussion, explore, develop and communicate design proposals by modelling ideas, using ICT where appropriate ***(British Values – democracy/ respect for choices)*** *make design decisions that take account of the availability of resources *use annotated sketches to develop their ideas, indicating the features that will appeal to intended users and how particular parts work	*plan the order of the main stages of making *select Lego equipment *explain their choices *learn how to construct computer-controlled Lego models, following online instructions *learn how to program computer-controlled Lego models *develop accuracy in assembling components	Start of the unit *evaluate products -how well products have been designed - how well products have been made - why materials have been chosen - what methods of construction have been used - how well products work - how well products achieve their purposes - how well products meet user needs and wants - who designed and made the products - where products were designed and made - when products were designed and made - whether products can be recycled or reused - how much products cost to make - how innovative products are -how sustainable the materials in products are -what impact products have beyond their intended purpose *identify criteria that can be used for their own designs During the units *critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make End of the units *evaluate their products against the original design specification, carrying out appropriate tests