**DESIGN AND TECHNOLOGY PROGRESSION OF KNOWLEDGE & SKILLS**

| **Year** | **National Curriculum** | **Topic** | **Knowledge** | **Skills** | **Vocabulary** |
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| EYFS |  | Designing | I know how to design something with a purpose in mind. | * I can represent my own ideas, thoughts and feelings. | Idea, like, dislike, exploration, sense, find, thought, think,  draw, tell |
| Making | I know how to safely use tools and materials.  I know that materials can be manipulated. | * I can develop an understanding of how materials can be manipulated. * I can represent my own ideas, thoughts and feelings. * Develop scissor skills, pincer grip, fine and gross motor skills | Make, cut, roll, tear, fold, rip, stick, glue, join, tape, create, mark |
| Evaluating | I know how to describe my product to others. | * I can talk about what I have made, say what has worked well and reflect on what I might do next time. * I can discuss the work of my peers. | This will be a child-led conversation. |
| Cooking and Nutrition | I know that food can be sorted by using my senses.  I know that food can be cut, shaped and mixed.  I can discuss ways to keep myself healthy. | * I can experience common fruit and vegetables, undertaking sensory activities i.e. appearance taste and smell. * I can experience cutting soft fruit and vegetables using appropriate utensils. * I know the importance of sleep, exercise, making healthy food choices and looking after my body (for example cleaning teeth.) | Names of some fruit and vegetable Taste, shape, size,  colour, texture, meat, vegetables, bread, knife, spoon, fork, |
| Mechanisms | I know that there are moving parts in products. | * I can work with paper and card to make simple flaps and hinges. * I can practise simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape. * I can assemble vehicles with moving wheels using construction kits. * I can explore moving vehicles through play. | Material, box, flap, tabs, movement, fold, bend, split pin |
| Structures | I know what structures are. | * I can gain experience of using construction kits to build walls, towers and frameworks. * I can gain experience of using basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card. * I can experience different methods of joining card and paper. | Material, build, make, box, taller, shorter, higher, lower |
| Textiles | I know that there are different types of fabric and that they can be cut and joined. | * I am beginning to identify some materials including fabric. * I can explore and use different fabrics. * I can cut and join fabrics with simple techniques. | Colour, texture, fabric, cut, stick, design, cover, feel, above, below |

| **Design and Technology** | **KS1 Design and Technology Curriculum**  *When designing and making, pupils should be taught to:*  **Design**   * Design purposeful, functional, appealing products for themselves and other users based on design criteria. * Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.   **Make**   * Select from and use a range of tools and equipment to perform practical tasks. * Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics   **Evaluate**   * Explore and evaluate a range of existing products. * Evaluate their ideas and products against design criteria.   **Technical Knowledge**   * Build structures, exploring how they can be made stronger, stiffer and more stable. * Explore and use mechanisms, in their products.   *As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating.*  **Cooking & Nutrition**   * Use the basic principles of a healthy and varied diet to prepare dishes * Understand where food comes from. |
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| Year 1 and Year 2  **Cycle**  **A**  Autumn 2 | Design purposeful, appealing products based on design criteria.  Generate, develop, model and communicate their ideas through talk and drawings.  Select from and use a range of tools and equipment to perform practical tasks.  Select from a wide range of materials according to their characteristics.  Evaluate their designs.  Build structures, exploring how they can be made stronger, stiffer and more stable. | **On the Move**  Design a boat that floats | Design  Planning and predicting to make a model, followed by evaluation afterwards.  Use knowledge gained in science on materials to make decisions on materials selected (waterproof v absorbent etc.) and how to strengthen them (braces/ folding etc.)  *Visit to Transport museum and links to history, exploring how boats and trains have changed over time.*  *Compare first car (Benz) at museum and visit from Alpine*  *F1 to discuss design today.* | I can work in a small group to generate ideas based on a simple design criteria and use my knowledge of the materials available.  I can plan my ideas by discussing them and by creating sketches and drawings.  I can select and use tools appropriately to create my boat.  I can use appropriate joining techniques where appropriate to join materials together.  I can test my ideas, evaluate them and adapt or make changes based on my findings where necessary. | Float, sink, weak, strong, absorbent, waterproof, join, fix, surface, structure, stiff, stable  Material, cardboard, metal, plastic, wood, paper, fabric  Design, plan, make, evaluate, design criteria, purpose, function, test, predict |
| Make  I know some joining techniques.  I know some properties of materials.  I can test my ideas. |
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|  | Use the basic principles of a healthy and varied diet to prepare dishes. Understand where food comes from. | **Healthy Hereos** | **Designing**  I know that I need to consider a design criteria, before designing a product.  I know where a range of fruit and vegetables come from e.g. farmed or grown  at home and the source of meat and dairy products. | I can design appealing products for a particular user based on simple design criteria.  I can generate initial ideas and design criteria through investigating a variety of fruit and vegetables.  I can communicate these ideas through talk and drawings. | fruit and vegetable names, names of equipment and utensils  sensory vocabulary e.g. soft, juicy, crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard |
| Year 1 and Year 2  Cycle  A  Spring 2 | Cooking and Nutrition | I know, and use, basic principles of a healthy and varied diet to prepare dishes, including how fruit and vegetables are part of  *The eatwell plate*. |  | flesh, skin, seed, pip, core, slicing, peeling, cutting, squeezing, healthy diet, choosing, ingredients, planning, investigating tasting, arranging, popular, design, evaluate, criteria |
| **Make**  I know how to hold and cut food safely using the claw grip.  [The Claw Grip - YouTube](https://www.youtube.com/watch?v=wVJUD8SSQRA) | I can use simple utensils and equipment to e.g. peel, cut, slice, squeeze, grate and chop safely.  I can select from a range of fruit and vegetables according to their characteristics e.g. colour, texture  and taste to create a chosen product. |
|  | I know that ingredients can  be combined to create a simple dish. | I understand hygiene pricncipals (washing hands, tying hair back, not passing knives etc.) |  |
|  | **Evaluate**  I know that I need to evaluate my product against the original design criteria. | I can taste and evaluate a range of fruit and vegetables to determine the intended user’s preferences.  I can evaluate ideas and finished products against design criteria, including intended user and purpose. |  |

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| Year 1  and 2  **Cycle A** Summer 2 | Build structures, exploring how they can be made stronger, stiffer and more stable. Design purposeful, functional, appealing products for themselves and other users based on design criteria.  Generate, develop, model and communicate their ideas through talking, drawing and mock-ups  Select from and use a range of tools and equipment to perform practical tasks. Explore and evaluate a range of existing products.  Evaluate their ideas and products against design criteria | **Wonderful Wildlife**  Make Freestanding Structures | **Design**  I know that I need to follow a design criteria when designing a product.  I can generate ideas based on a simple design criteria.  I can discuss the work of others and I am introduced to real life examples (architects and engineers including Gaudi, Hundertwasser, Frank Gehry and Norman Foster)  I understand that a structure that is stable, is less likely to fall over.  **Evaluate**  I know that I need to evaluate my product against the original design criteria. | **Make**  I can generate ideas based on simple design criteria and my own experiences, explaining what I could make.  I can develop, model and communicate their ideas through talking, mock-ups and drawings.  I can plan by suggesting what to do next.  I can select and use tools, skills and techniques, explaining my choices.  I can select new and reclaimed materials and construction kits to build my structures.  I can use simple finishing techniques suitable for the structure I am creating.  I can apply knowledge gained about ways to make a freestanding structure, stiffer, stronger and more stable (such as using a wider base, triangle shapes, structs, a buttress or by folding and layering materials for strength.)  I can demonstrate an understanding of effective joining techniques. | cut, fold, join, fix  structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point,straight,curved  metal, wood, plastic  circle, triangle, square, rectangle, cuboid, cube, cylinder  design, make, evaluate, user, purpose, ideas, design criteria, product, function |
| **Evaluate**  I can explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.  I can use self and peer assessment to evaluate my model and talk about things that went well and things that I could do differently next time. |

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| Year 1  & 2  Cycle B  Autumn 2 | | Design purposeful, functional, appealing products for themselves and other users based on design criteria.  Generate, develop, model and communicate their ideas through talking, drawing and templates.  Select from and use a range of tools and equipment to perform practical tasks. Select from and use a wide range of materials and components.  Explore and evaluate a range of existing products  Evaluate the ideas and products against design criteria | **Around the World**  Textiles – make a decoration. | | | **Design**  I know that I need to consider a design criteria, before designing a product.  I can design a purposeful, functional, appealing product based on my simple design criteria.  I can develop and communicate ideas through talking, sketches and drawings.  I have an awareness of the properties of different materials and fabrics. | I can design a functional and appealing product for a chosen user and purpose based on simple design criteria.  I can generate, develop, model and communicate my ideas as appropriate through talking, drawing, templates, mock-ups and information and  communication technology. | | | Names of existing products, joining and finishing techniques, tools, fabrics and components  template, pattern pieces, mark out, join, decorate, finish  features, suitable, quality mock-up, design brief, design criteria, make, evaluate, user, purpose, function |
| **Make**  I know how to join fabrics using different techniques e.g. running stitch, glue, over stitch, stapling.  I know how simple 3-D textile products are made, using a template to create two identical shapes.  I know how to explore different finishing techniques e.g. using painting, fabric crayons, stitching, sequins, buttons and ribbons. | I can select from and use a range of tools and equipment to perform practical tasks such as marking out, cutting, joining and finishing.  I can name and discuss the properties of everyday materials and explore the uses of these materials.  I can select from and use textiles according to their characteristics. | | |
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|  | | | **Evaluate**  I know that I need to evaluate my product against the original design criteria. | I can explore and evaluate a range of existing textile products relevant to the project being undertaken. | | |  |
|  | | |  | I can evaluate my ideas throughout and my final  products against original design criteria, talk identifying things that went well and things that I could do differently next time.  I can evaluate the work of others. | | |  |

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| Year 1  & 2  Cycle B Spring 2 | Design purposeful, functional, appealing products for themselves and other users based on design criteria.  Generate, develop, model and communicate their ideas through talking, drawing and mock-ups.  Select from and use a range of tools and equipment to perform practical tasks. Evaluate their ideas and products against design criteria.  Explore and use mechanisms, in their products. | **Fire! Fire!**  Mechanisms *Wheels and Axles* | **Design**  I know that I need a design criteria when designing a product. | I can generate initial ideas and simple design criteria through talking and using own experiences.  I can develop and communicate ideas through drawings and mock-ups.  I can create a simple diagram of my model with labels. | vehicle, wheel, axle, axle holder, chassis, body, cab  assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism  names of tools, equipment and materials used  design, make, evaluate, purpose, user, criteria, functional |
| **Make**  I know what wheels and axles are mechanisms that help things to move.  I know how to distinguish between fixed and freely moving axles.  I know that the chassis is the frame or base on which the vehicle is built. | I can select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.  I understand how to use tools and equipment safely and competently.  I can explore and use wheels, axles and axle holders.  I can select from and use a range of materials and components such as paper, card, plastic and wood  according to their characteristics. |
| **Evaluate**  I know that I need to evaluate my product against the original design criteria. | I can explore and evaluate a range of products with wheels and axles.  I can evaluate my ideas throughout and my products against original criteria. I can say what went well and things that I would change next time. |

| **Design and Technology** | **KS2 Design and Technology Curriculum**  *When designing and making, pupils should be taught to:*  **Design**   * Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups. * Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.   **Make**   * Select from and use a wider range of tools and equipment to perform practical tasks accurately. * Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.   **Evaluate**   * Investigate and analyse a range of existing products. * Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. * Understand how key events and individuals in design and technology have helped shape the world.   **Technological Knowledge**   * Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. * Understand and use mechanical systems in their products. * Understand and use electrical systems in their products. * Apply their understanding of computing to programme, monitor and control their products.   *As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating.*  **Cooking & Nutrition**   * Understand and apply the principles of a healthy and varied diet. * Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet. * Become competent in a range of cooking techniques [for example, selecting and preparing ingredients; using utensils and electrical equipment; applying heat in different ways; using awareness of taste, texture and smell to decide how to season dishes and combine ingredients; adapting and using their own recipes] * Understand the source, seasonality and characteristics of a broad range of ingredients. |
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| Year 3  and 4  **Cycle A** Spring 2 | Apply their understanding of how to strengthen, stiffen and reinforce more complex structures. | **Our World**  Shell Structures | **Design**  I know how to follow a design criteria when designing a product.  Identify the purpose of shell structures (to contain and protect things.)  Understand that a shell structure has a solid outer surface (which can be curved or flat) and a hollow inner area.  Explore real life examples of buildings using a shell structure such as The Shard and O2.  Understand that shell structures can also be used as packaging (Toblerone etc.)  I know how to use research to inform my design ideas. | Explain how a shell structure is formed and give examples of ways in which the structure can be reinforced and strengthened (curved structures spread weight evenly, folding layering, corrugating, ribbing or lamination.).  Know and use technical vocabulary relating to structures.  I can develop a clear design criteria to base my design on and plan out the main stages of making to create my structure.  Explore using CAD to design nets (TinkerCAD)  Generate, develop, model and communicate ideas through discussion, annotated sketches, exploded diagrams and prototypes. | shell structure, three- dimensional (3-D) shape, net, cube, cuboid, prism, vertex, edge, face, length, width, breadth, capacity  marking out, scoring, shaping, tabs, adhesives, joining, assemble, accuracy, material, stiff, strong, reduce, reuse, recycle, corrugating, ribbing, laminating  font, lettering, text, graphics, decision, evaluating, design brief design criteria, innovative, prototype |
| **Make**  I know how to use nets of cubes and cuboids and, where appropriate, more complex 3D shapes.  I know how to reinforce and strengthen a product  e.g. folding and shaping, corrugating, ribbing, laminating. | I follow the steps of making I have planned. I am beginning to evaluate as I work and thing of alternative ways to do things if necessary.  I can create simple 3D shell structures from 2D nets with tabs and explore the different ways these can be assembled.  I can select and use appropriate tools to measure, mark out, cut, score, shape and assemble with some accuracy.  I can explain my choice of materials according to functional properties and aesthetic qualities.  I can use finishing techniques suitable for the product I am creating. |
| **Evaluate**  I know that I need to evaluate my product against the design criteria and the intended user and purpose. | I can investigate and evaluate a range of existing shell structures including the materials, components and techniques that have been used.  I can evaluate how effective my shell structures is in terms of stability/strength and structure. I can talk about how well the product met the design criteria and its intended purpose.  I can discuss my own work and the work of my peers, considering the changes that I would make next time and things that worked well.  I am beginning to explain the changes that I made in the design/ making stages and the reasons for my decisions. |

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| Year 3  and 4  **Cycle A** Summer 2 | Understand and apply the principles of a healthy and varied diet.  Cook a repertoire of predominantly savoury dishes so that they are able to feed themselves and others a healthy and varied diet.  Become competent in a range of cooking techniques.  Understand the source, seasonality and characteristics of a broad range of ingredients. | **The Brave and the Bold**  Cooking and Nutrition - Prepare a healthy and nutritious dish  (linking to learning on The Shang Dynasty) | **Design**  I know about a range of fresh and processed ingredients appropriate for their product, and whether they are grown, reared or  caught.  Apply the principals of nutrition and healthy eating to prepare dishes (Eatwell plate and food groups.)  Understand the source, seasonality and characteristics of a range of ingredients.  I know the need to design for a purpose, for a target audience, taking their wants and needs into consideration. | I can generate and clarify ideas through discussion with peers and adults.  I can review existing products/ dishes considering appearance, taste, texture and aroma.  I can plan appealing savoury dishes according to a design criteria for a target customer. I can select from a range of ingredients.  I can plan a recipe, listing ingredients, utensils and equipment and method.  I can use annotated sketches and appropriate information and communication technology, such as web-based  recipes, to develop and communicate ideas. | name of products, names of equipment, utensils, techniques and ingredients  texture, taste, sweet, sour, hot, spicy, appearance, smell, preference, greasy, moist, cook, fresh, savory, sensory  hygienic, edible, grown, reared, caught, frozen, tinned, processed, seasonal, harvested healthy/varied diet  planning, design criteria, purpose, user, annotated sketch, design criteria, market research, target customer/ audience. |
| **Make**  I know how to use appropriate equipment and utensils to prepare and combine food.  I know about safety and hygiene in the kitchen.  (Not passing knives, the claw grip and bridge grip when using knives.)  I understand hygiene principals (washing hands, tying back hair etc.)  Learn about seasoning and adapting recipes. | I can follow a simple recipe.  I understand cooking techniques, selecting ingredients, preparing ingredients safely and hygienically.  I can select and use appropriate tools and utensils, including some electrical equipment, confidently and safely to prepare and combine ingredients..  [The Claw Grip - YouTube](https://www.youtube.com/watch?v=wVJUD8SSQRA) [The Bridge Hold - YouTube](https://www.youtube.com/watch?v=uhNvNMOMBg8) |
| **Evaluate**  I understand the need to research and evaluate existing products.  I know that I need to evaluate my product against the design criteria and the intended user and purpose.  I can consider the views of others to improve my work. | I can carry out sensory evaluations of a variety of ingredients and existing products (taste tests/ packaging/ visual appeal evaluation). I can record the evaluations using  e.g. tables and simple graphs.  I can evaluate the ongoing work and the final product with reference to the design criteria and the views of others.  I can discuss the work of my peers and consider what has worked well and what could be improved. |

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| Year 3  and 4  Cycle B Autumn 2 |  | Electrical Systems *(Taught in Science)* | I know the key features of electrical safety.  I know how to create an electrical circuit. | * understand and use electrical systems in products | Series circuit, fault, connection, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, system, input device, output device, process, input, output |

| **Year** | **National Curriculum** | **Topic** | **Knowledge** | **Skills** | **Vocabulary** |
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| Year 3  and 4  **Cycle B**  Autumn 2 | Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.  Generate, develop, model and communicate their ideas through discussion and annotated sketches.  Select from and use a wider range of tools and equipment to perform practical tasks accurately.  Select from and use a wider range of materials and components, including textiles and ingredients, according to their functional properties and aesthetic qualities.  Investigate and analyse a range of existing products.  Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. | **Lights, Camera, Action!** | **Design**  I know how to follow a design criteria when designing a product.  I know how to use research to inform my design ideas.  I can generate sketches and make decisions about my final design, explaining my decisions.  Learn about the properties of some fabrics. | I can research existing retailers and products and begin to think about their target market.  I can generate realistic ideas through discussion and design criteria for an appealing, functional product fit for purpose and specific user/s.  Generate, develop, model and communicate ideas through discussion, annotated sketches, prototypes samples and pattern pieces.  II can plan the main stages of making.  I can select fabrics and fastenings according to their functional characteristics e.g. strength, and aesthetic qualities e.g. pattern and colour. | fabric, names of fabrics, fastening, compartment, zip, button, structure, finishing technique, strength, weakness, stiffening, templates, stitch, seam, seam allowance, applique, names of stitches. |
| Textiles – design a felt coin purse | **Make**  I know how to securely join two pieces of fabric together.  I know the need for a pattern and that garments/ textile products have a right and wrong side.  I consider safety when using tools (needles, sharp scissors etc.) | I can produce pattern pieces for my design.  I can follow a sequence of steps to produce a finished product.  I can select and use a range of appropriate tools with some accuracy e.g. cutting, joining and finishing. I can explain some reasons for my choices.  I can join fabrics using different joining techniques e.g. running stitch, over stitch, back stitch and blanket stitch, as well as gluing and pinning.  I can explore finishing techniques (applique and embellishments.) | user, purpose, design,  model, evaluate, prototype, annotated sketch, functional, innovative, investigate, label, drawing, aesthetics, function, pattern pieces |
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|  | **Evaluate**  I know that I need to evaluate my product against the design criteria and the intended  user and purpose. | I can investigate and evaluate a range of 3-D textile products relevant to the project.  I can evaluate my product against my own design criteria and with the intended user. |  |
|  |  | I can take account of others’ views, say what has worked well and what can be improved. |  |
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| Year 3  and 4  **Cycle B** Summer 2 | Generate, develop, model and communicate ideas through discussion, models and annotated sketches  Understand and use mechanical systems in their products. | **Stones and Bones**  Mechanisms -Levers and Linkages  *Links to ‘The Human Body’ for moving book page*. | **Design**  Explore and use mechanisms such as flaps, sliders and levers.  Explore every day levers (such as a can ring pull or a spade as well as linkages, window hinge, fold up clothes airer etc.)  Distinguish between fixed and loose pivots.  I know how to develop a design criteria when designing a product.  I can plan and order the main making stages.  I know how to use research to inform my design ideas. | I can generate realistic ideas and my own design criteria through discussion, focusing on the needs of the user.  I can explain how to use lever and linkage mechanisms.  I can generate, develop, model and communicate ideas through discussion, annotated sketches, prototypes.  I can investigate and analyse a range of existing pop up books and, where available, other products with lever and linkage mechanisms. https://www.youtube.com/watch?v=kamxGHTvafg  I can order the main stages of making. | mechanism, lever, linkage, pivot, slot, bridge, guide  system, input, process, output  linear, rotary, oscillating, reciprocating  user, purpose, function  prototype, design criteria, innovative, appealing, design brief |
| **Make**  I know how to use lever and linkage mechanisms.  . | I follow the sequence of steps I have planned, making changes where necessary.  I can select from and use appropriate tools with some accuracy to cut, shape and join paper and card.  I can use finishing techniques suitable for the product I am creating. |
| **Evaluate**  I know that I need to evaluate my product against the design criteria and the intended user and purpose. | I can investigate and analyse books and, where available, other products with lever and linkage mechanisms.  I can evaluate my own product and ideas against criteria and user needs, as I design and make.  I can evaluate my ideas and products against my own design criteria and consider the views of others to improve my work.  I can evaluate the work of others, explaining what has worked well and what could be improved. |

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| Year 5  and 6  Cycle A  Autumn 2 | Use research and develop design criteria to inform design.  Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, and computer-aided design.  Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.  Understand how key events and individuals in design and technology have helped shape the world. | **Woeful War**  Frame Structures | **Design**  I know that designs can be formulated from research gained from different sources.  Explore real life examples where a truss, gussets and braces have been used such as The London Eye or Iron Bridge constructed by Abraham Darby.  I know how to create my own design specification.  Understand that frame structures use beams, columns and slabs to hold heavy weights.  Know how frames are strengthened, reinforced and made (rigid joints, foundations, triangulation, bracing etc.). | I can carry out research into existing frame structures using books and web-based resources. I can explain the difference between a shell structure (learning in LKS2) and a frame structure.  I can develop a simple design specification/criteria to guide the development of my ideas and products, taking account of constraints including time, resources and cost.  I can generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches and cross-sectional diagrams.  I can explain ways that frames are strengthened.  I can formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used.  I can plan and try out joining techniques that I will use when building my frame structure. | frame structure, stiffen, strengthen, foundations, reinforce, triangulation, truss, gusset, brace, beam, column, slab, weight, stability, shape, join, joint, temporary, permanent  design brief, design specification, prototype, annotated sketch, purpose, user, innovation, research, functional  vice, hack saw, clamp |
| **Make**  I know how to strengthen, stiffen and reinforce 3-D frameworks.  I know that carpentry tools including a vice and hacksaw are needed to cut my lengths of wood.  I know safety procedures that must be followed when using tools (tying hair back, wearing safety goggles when sawing etc.) | I can follow my design instructions carefully.  I can competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks.  I can use carpentry equipment safely (including a wood vice and a hacksaw.)  I can test and modify my design as necessary. |
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|  | **Evaluate**  I know how to test, modify and evaluate against the design specification  and suggest improvements. | I can research key events and individuals relevant to frame  structures.  I can investigate and evaluate a range of existing frame structures.  I can critically evaluate my product against my design specification and purpose, identifying strengths and areas for development, and carrying out appropriate tests. |  |
|  |  | I can evaluate and give constructive feedback to peers about their products. |  |

| **Year** | **National Curriculum** | **Topic** | **Knowledge** | **Skills** | **Vocabulary** |
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| Year 5 and Year 6  **Cycle A**  Summer 2 | Understand and apply the principles of a healthy and varied diet.  Cook a repertoire of predominantly savory dishes so that children are able to feed themselves and others a healthy and varied diet.  Become competent in a range of cooking techniques. – adapting and creating own recipes  Understand the source, seasonality and characteristics of a broad range of ingredients. | **Shakespeare**  Cooking and Nutrition – plan a healthy and nutritious meal | **Design**  Understand the principals of nutrition and healthy eating to prepare dishes (Eatwell plate and food groups.)  Understand the importance of undertaking market research and how this informs the design process.  I know about seasonality in relation to food products and the source of different food products.  Understand the source, seasonality, characteristics and cost implications of a broad range of ingredients.  Understand how key chefs have influences eating habits to promote varied and healthy diets. | Apply the principals of nutrition and healthy eating to prepare dishes (Eatwell plate and food groups.)  Research and evaluate a range of existing products undertaking market research and taste tests.  Consider packaging designs evaluating choice of colour, font, materials, size and functionality.  Record the evaluations (using tables graphs, charts and computing where appropriate.)  Use this knowledge to inform the design criteria.  Generate ideas through research and discussion with peers and adults to develop a design brief and criteria for a design specification, linked to user and purpose.  Plan a meal, to include mainly savoury dishes, according to a design criteria.  Consider how dishes will complement each other and create a cohesive meal.  To include a budget.  Plan a step-by-step recipe, listing ingredients, utensils and equipment and method. | ingredients, yeast, dough, bran, flour, wholemeal, unleavened, baking soda, spice, herbs  fat, sugar, carbohydrate, protein, vitamins, nutrients, nutrition, healthy, varied, gluten, dairy, allergy, intolerance, savoury, source, seasonality  utensils, combine, fold, knead, stir, pour, mix, rubbing in, whisk, beat, roll  out, shape, sprinkle, crumble  design specification, innovative, research, evaluate, design brief |
| **Make**  Learn about seasoning and adapting recipes.  Understand cooking techniques, selecting ingredients and preparing ingredients safely and hygienically.  I know how to use utensils and equipment including heat sources to prepare and cook food. | Select and use appropriate utensils and equipment accurately to measure and combine appropriate ingredients.  Use tools and utensils, including some electrical equipment and heat sources, confidently and safely.  Demonstrate a good awareness of safety in the kitchen (the claw grip and bridge grip when using knives, not passing knives etc.)  Understand hygiene principals (washing hands, tying back hair etc.) |
|  |  | [The Claw Grip - YouTube](https://www.youtube.com/watch?v=wVJUD8SSQRA)  [The Bridge Hold - YouTube](https://www.youtube.com/watch?v=uhNvNMOMBg8) | Decorate and present food product  appropriately for the intended user and purpose. |  |
| **Evaluate**  I know how to test and evaluate designed products against research and the design specification and suggest improvements. | Carry out sensory evaluations of a range of relevant products and ingredients. Record the evaluations using e.g. tables/graphs/charts such as star diagrams.  Evaluate peers and own final dishes with reference back to the design brief and design specification, considering the views of others when identifying improvements. |
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| Year 5  and 6  Cycle B Spring |  | Electrical Systems *(Taught in Science)* | I know the difference between timed events and those that depend upon monitoring.  I know how to include a switch into a circuit. |  | Reed switch, toggle switch, push-to-make switch, push-to- break switch, light dependent resistor (LDR), tilt switch, light emitting diode (LED), bulb, bulb holder, battery, battery holder, USB cable, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, series circuit, parallel circuit ,  crumble, motor |

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| Year 5  and 6  Cycle B Autumn 2 | Generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional and exploded diagrams.  **Understand and use mechanical systems in products.**  Investigate and analyse a range of existing products.  Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. | **Super Settlers**  Mechanisms-Pulleys and Gears Make a simple Rube Goldberg Machine | **Design**  Know that mechanical and electrical systems have an input, process and an output.  Know that gears and pulleys can be used to speed up, slow down or change the direction of movement.  Know that gears and pulleys can be used to increase or decrease a speed or force.  Know that designers and engineers work to a design criteria and solve problems. | Explore everyday gears and levers (bicycle gears, pulley systems for lifting stones/ modern day cranes etc.) Investigate famous manufacturing and engineering companies relevant to the project.  Decide what the end goal to achieve at the completion of Rube Goldberg Machine will be.  For example, drop a bottle in a recycling bin, water a plant, pop a balloon, fill a glass with water, squeeze toothpaste onto a toothbrush etc.  Use this to inform the design criteria.  Work as a team to generate, develop, model and communicate ideas through discussion, annotated sketches, cross sectional diagrams and prototypes.  Produce detailed lists of tools, equipment and materials. Formulate step-by-step plans and, if appropriate, allocate tasks within a team. | pulley, drive belt, gear, rotation, spindle, driver, follower, ratio, transmit, axle, motor  circuit, switch, circuit diagram annotated drawings, exploded diagrams  mechanical system, electrical  system, input, process, output  design decisions, functionality, innovation, authentic, user, purpose, design specification, design brief  . |
| **Make**  Know ways to build or use simple pulleys or gears. | Select from a range of tools, materials and equipment to make a machine.  Work within the restraints of time and resources.  Use tools safely and competently.  Work in a group to design a simple Rube Goldberg Machine (chain reaction) involving a pulley or gear. This should be accurately assembled and well finished. |
| **Evaluate**  I know how to test and evaluate designed products against research and the design specification and  suggest improvements. | Compare the final product to the original design specification.  Throughout the process, test and critically evaluate the functionality of the ‘machine’ and whether it meets the design criteria. Make modifications if necessary.  Consider the views of others to improve my work. |

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| Year 5  and 6  Cycle B Summer 2 | Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.  Generate, develop, model and communicate their ideas through discussion and annotated sketches.  Select from and use a wider range of tools and equipment to perform practical tasks accurately.  Select from and use a wider range of materials and components, including textiles and ingredients, according to their functional properties and aesthetic qualities.  Investigate and analyse a range of existing products.  Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work. | **Ancient Civilisations**  Textiles -  Create a phone case (tie dye or batik. | **Design**  Know how technological advancements have changed and influences the textile industry.  Consider the environmental impact of the textile industry and sustainability.  Learn about the names and properties of some fabrics.  Understand the importance of market research and how this informs the design process.  Know that a 3-D textile product can be made from a combination of pattern pieces, fabric shapes and different fabrics.  Understand the need for a design criteria and the importance of designing to the restraints of time and cost.  Learn about the properties of some fabrics. | Analyse existing products according to their construction, aesthetic qualities, cost and functionality.  Use research and develop design criteria to inform the design of an innovative, functional, appealing product that is fit for purpose, aimed at particular individuals or groups.  Select materials and components based on functional and aesthetic properties.  Develop, model and communicate ideas through talking, drawing, templates, mock-ups and prototypes and, where appropriate, computer-aided design. Generate sketches and make decisions about the final design, explaining decisions.  Outline a step-by-step plan for each stage of making, including dyeing techniques. | seam, seam allowance, wadding, reinforce, right side, wrong side, hem, template, pattern pieces  name of textiles and fastenings used, pins, needles, thread, pinking shears, fastenings, iron transfer paper  design criteria, annotate, design decisions, functionality, innovation, authentic, user, purpose, evaluate, mock-up, prototype |
| **Make**  Know that a 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.  Know the need for a pattern and seam allowance and that designs have a ‘right and wrong’ side.  Know that fabrics can be strengthened, stiffened and reinforced where appropriate.  Explore different techniques used to create surface pattern (applique, batik, tie dye etc.) | Create accurate pattern pieces.  Select tools and join fabrics using appropriate joining techniques e.g. pinning, running stitch, over stitch, back stitch and blanket stitch.  Explain choices.  Create a simple button hole.  Select from and use a range of tools and equipment to make a product that is accurately assembled and well finished. Work within the constraints of time, resources and cost.  Create surface pattern by learning the process for tie dye or batik.  Explore finishing techniques (applique, embroidery and embellishments) |
| **Evaluate**  Know how to test and evaluate designed products against research and the design specification and suggest improvements. | Investigate and analyse textile products linked to final product.  Make modifications to design during the making process if appropriate.  Gather feedback on product with the intended user and critically evaluate the quality of the design, manufacture, functionality and fitness for purpose against the design brief. |