**Bromesberrow St. Mary’s Design and Technology Curriculum**

At Bromesberrow St. Mary’s school our approach to Design and Technology is to ensure that we have a clear coverage plan in place to enable all children to experience the breadth of the National Curriculum in Design and Technology; with a recognition of the links with Art and Design, Mathematics, Science, Computing and Engineering. Our teachers have the ability to link to the topics they undertake within our classes; threading the imaginative, creative and evaluative processes within DT to design and create in real and relevant contexts, considering their own and others’ needs, wants, and values. With this, pupils have the opportunity to take risk, become resourceful, innovative, enterprising and capable citizens through the opportunities they are provided, whilst learning about influential designers around the world.

**Early Years**

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| Early Years Foundation Stage Objectives. | * Children use what they have learnt about media and materials in original ways, thinking about uses and purposes. They represent their own ideas, thoughts and feelings. * They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. |

**Key stage 1**

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| National Curriculum Objectives | Pupils should be taught:  **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 [for example, cutting, shaping, joining and finishing] * 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 [for example, levers, sliders, wheels and axles], in their products. |

**Key Stage 2**

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| National Curriculum Objectives | Pupils should be taught:  **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 [for example, cutting, shaping, joining and finishing], 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   **Technical knowledge**   * Apply their understanding of how to strengthen, stiffen and reinforce more complex structures * Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] * Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] * Apply their understanding of computing to program, monitor and control their products. |

**Class One (Preschool, Reception and Y1).**

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| **Preschool** | **Skills** | **Vocabulary** |
| * Choose the right resources to carry out their own plan. For example, choosing a spade to enlarge a small hole they dug with a trowel. * Use all their senses in hands on exploration of natural materials. * Explore collections of materials with similar and/or different properties. * Explore how things work. * Explore and talk about different forces they can feel. * Talk about the differences between materials and changes they notice. * Make imaginative and complex ‘small worlds’ with blocks and construction kits, such as a city with different buildings and a park. * Explore different materials freely, in order 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. * Create closed shapes with continuous lines, and begin to use these shapes to represent objects. | Materials, same, different, directional words, tall, small, lines, stick, join, idea. |

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| **Reception**  Reception are provided with opportunities to explore and use different equipment, resources and textiles throughout their adult led learning and play. | **Skills** | | **Vocabulary** |
| **Design** | * Comment on images of familiar situations in the past. * Encourage children to notice features in the natural world. Help them to define colours, shapes, texture and smells in their own words. Discuss children’s responses to what they see. * With adult support, children given a range of materials to use for construction. They are able to talk about what they want to make with what has been provided. * Use gestures, talking and arrangements of materials and components to show design * Use contexts set by the teacher and myself * Use language of designing and making (join, build, shape, longer, shorter, heavier etc.) | Materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, |
| **Make** | * Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: pencils for drawing and writing, paintbrushes, scissors, knives, forks and spoons. * Create collaboratively, sharing ideas, resources and skills. * With adult support, use a range of materials and tools and use them with care and precision. * With support, children shown how to use glue and sticky tape to join materials. * Construct with a purpose, using a variety of resources * Select tools & techniques to shape, assemble and join * Replicate structures with materials / components * Discuss how to make an activity safe. | Directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, |
| **Evaluate** | * Return to and build on their previous learning, refining ideas and developing their ability to represent them. * Discuss problems and how they might be solved as they arise. Reflect with children on how they have achieved their aims. * Adapt work if necessary * Consider and manage some risks * Practise some appropriate safety measures with increase independency * Talk about how things work * Look at similarities and differences between existing objects / materials / tools * Show an interest in technological toys * Describe textures | Good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft. |
| **Technical Knowledge - Textiles** | * With support, sort threads and fabrics; talking about colours and textures. * Identify and talk about textiles in the environment, with adult support. * Make pictures using different fabrics and textures. * Weave with wool and recycled material. * Create simple collages using different papers and materials.   Collect different natural materials to create a temporary collage. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, collage, squares, gaps, cut, place, arrange. |
| **Technical knowledge – food and nutrition** | * Discuss how to make an activity safe and clean with an adult * Discuss use of senses * Begin to understand some food preparation tools, techniques and processes * Practise stirring, mixing, pouring, blending * Understand need for variety in food * Begin to understand that eating well contributes to good health | Safe, clean, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food. |

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| **Year 1** | **Skills** | | **Vocabulary** |
| **Design** | * have own ideas * explain what I want to do * explain what my product is for, and how it will work * use pictures and words to plan, begin to use models * design a product for myself following design criteria * Be shown, and use existing products similar to design I want to make. | Ideas, product, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching. |
| **Make** | * Explain what I’m making and why * Consider what I need to do next * Select tools/equipment to cut, shape, join, finish and explain choices * With support, measure, mark out, cut and shape * Choose suitable materials and explain choices * Try to use finishing techniques to make product look good, adult support needed. * Work in a safe and clean manner | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape. |
| **Evaluate** | * With support, talk about my work, linking it to what I was asked to do * With support, talk about existing products considering: use, materials, how they work, audience, where they might be used * With support, talk about existing products, and say what is and isn’t good * With support, talk about things that other people have made * Begin to talk about what could make product better | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft. |
| **Technical Knowledge -**  **Material/ Structures** | * Begin to measure and join materials, with some support * Describe differences in materials * Suggest ways to make material/product stronger | Measure, ruler, join, materials, strong, weak, |
| **Technical Knowledge - Mechanisms** | * Begin to use levers or slides | Levers, slides |
| **Technical Knowledge - Textiles** | * With adult support, weave into netting and use weaving boards. * Start to complete simple stiches into fabric pictures and designs, with support. * Use fabric paints and crayons – noticing how they work differently. * Decorate textiles using glue, paint or stitching to add detail. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Describe textures * Wash hands & clean surfaces * Think of interesting ways to decorate food * Say where some foods come from, (i.e. plant or animal) * Describe differences between some food groups (i.e. sweet, vegetable etc.) * Discuss how fruit and vegetables are healthy * With support, cut, peel and grate safely | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food. |

**Class 2 (Years 2 and 3).**

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| **Year 2** | **Skills** | | **Vocabulary** |
| **Design** | * Have own ideas and plan what to do next * Explain what I want to do and describe how I may do it * Explain purpose of product, how it will work and how it will be suitable for the user * Describe design using pictures, words, models, diagrams, begin to use ICT * Design products for myself and others following design criteria * With some support, choose best tools and materials, and explain choices * Use knowledge of existing products to produce ideas | Ideas, product, purpose, diagrams, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, use, soft, tough, strong, weak, shiny, dull |
| **Make** | * Explain what I am making and why it fits the purpose. * Make suggestions as to what I need to do next. * Join materials/components together in different ways, with support. * Measure, mark out, cut and shape materials and components, with support. * Describe which tools I’m using and why. * Choose suitable materials and explain choices depending on characteristics. * Use finishing techniques to make product look good. May use adult support. * Work safely and cleanly. | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, purpose, components, tools (e.g. saw, screwdriver, card, wood), material characteristics, safe, clean. |
| **Evaluate**  What is evaluation? | * Describe what went well, thinking about design criteria * Talk about existing products considering: use, materials, how they work, audience, where they might be used; express personal opinion, with some support. * Evaluate how good existing products are * Talk about what I would do differently if I were to do it again and why | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft, design criteria, opinion. |
| **Technical Knowledge -**  **Material/ Structures** | * Measure materials, with some support. * Describe some different characteristics of materials * Join materials in different ways * Use joining, rolling or folding to make it stronger * Use own ideas to try to make product stronger | Measure, ruler, join, materials, strong, weak, material characteristics, rolling, folding. |
| **Technical Knowledge - Mechanisms** | * Use levers or slides * Begin to understand how to use wheels and axles | Levers, slides, wheels, axles. |
| **Technical Knowledge - Textiles** | - Show pattern through weaving (paper bag weaving).  - Use a dyeing technique to alter a textiles colour and pattern.  - Use natural dyes such as beetroot, berries etc.  - Decorate textiles with glue or stitching, to add colour and detail.  - Begin to add shape to work through cutting and layering.  - Join fabric using glue.  - Begin to sew fabrics together with a simple running stitch.  - Know the safety when using hot glue and needles. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Begin to explain hygiene and keep a hygienic kitchen * Describe properties of ingredients and importance of varied diet * Say where food comes from (animal, underground etc.) * Describe how food is farmed, home-grown, caught * Draw eat well plate; explain there are groups of food \*describe “five a day” * Cut, peel and grate with increasing confidence | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food, hygienic, diet, ingredients, animal, grown, caught, five a day, peel, cut. |

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| **Year 3** | **Skills** | | **Vocabulary** |
| **Design** | * Begin to research others’ needs * Show my design meets a range of requirements that have been given to me * Describe purpose of product * Follow a given design criteria * Have at least one idea about how to create product * Create a plan which shows order, equipment and tools, with some support. * describe design using an accurately labelled sketch and words * make design decisions * explain how product will work * make a prototype * begin to use computers to show design | Ideas, product, purpose, diagrams, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, use, soft, tough, strong, weak, shiny, dull, need, requirements, create, order, equipment, drawings, annotated, sketch, prototype, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, property, use, different, hard, soft, tough, strong, weak, shiny, dull, rigid, brittle, transparent, opaque, absorbent, non-absorbent, permeable, impermeable |
| **Make** | * Select suitable tools/equipment, explain choices; begin to use them accurately * Select appropriate materials, fit for purpose. * Work through plan in order * Consider how good product will be * Begin to measure, mark out, cut and shape materials/components with some accuracy * Begin to assemble, join and combine materials and components with some accuracy * Begin to apply a range of finishing techniques | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, purpose, components, tools (e.g. saw, screwdriver, card, wood), material characteristics, safe, clean, bench hook, junior hacksaw |
| **Evaluate** | * Look at design criteria while designing and making * Use design criteria to evaluate finished product * Say what I would change to make design better * Begin to evaluate existing products, considering: how well they have been made, materials, whether they work, how they have been made, fit for purpose * Begin to understand by whom, when and where products were designed * Learn about some inventors/designers/ engineers/chefs/ manufacturers of ground breaking products | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft, design criteria, opinion, |
| **Technical Knowledge -**  **Material/ Structures** | * Use appropriate materials * Work accurately to make cuts and holes * Join materials * Begin to make strong structures | Measure, ruler, join, materials, strong, weak, material characteristics, rolling, folding, cuts, holes, structure. |
| **Technical Knowledge - Mechanisms** | * Select appropriate tools / techniques * Alter product after checking, to make it better * Begin to try new/different ideas * Use simple lever and linkages to create movement | Levers, slides, wheels, axles. |
| **Technical Knowledge - Textiles** | * Select appropriate materials and give reason to why they have chosen them. * Use a variety of techniques to create effects with fabric (printing, dyeing, weaving, stitching etc). * Begin to develop skills in stitching – running stitch, overstitch, and back stitch. * Begin to develop skills to sew buttons and sequins to fabric to then be used for a design. * Explore patterns from different cultures and times to inspire their creations. * Use different materials for decoration – explaining why they have made the choices they have. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Carefully select ingredients * Use equipment safely * Make product look attractive * Think about how to grow plants to use in cooking * Begin to understand food comes from UK and wider world * Describe how healthy diet= variety/balance of food/drinks * Explain how food and drink are needed for active/healthy bodies. * Prepare and cook some dishes safely and hygienically * Grow in confidence using some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food, hygienic, diet, ingredients, animal, grown, caught, five a day, peel, cut, equipment, attractive, decoration, UK, Wider world, transport, balance, slicing, spread, knead, bake. |
|  | **Technical Knowledge – Electrical systems** | * Use simple circuit in product * Learn about how to program a computer to control product. | Circuit, program, control. |

**Class 3 (Years 4, 5 and 6)**

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| **Year 4** | **Skills** | | **Vocabulary** |
| **Design** | * Use research for design ideas * Show design meets a range of requirements and is fit for purpose * Begin to create own design criteria * Have at least one idea about how to create product and suggest improvements for design. * Produce a plan and explain it to others * Say how realistic a plan is. * Include an annotated sketch * Make and explain design decisions considering availability of resources * Explain how product will work * Make a prototype * Begin to use computers to show design. | Ideas, product, purpose, diagrams, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, use, soft, tough, strong, weak, shiny, dull, need, requirements, create, order, equipment, drawings, annotated, sketch, prototype, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, property, use, different, hard, soft, tough, strong, weak, shiny, dull, rigid, brittle, transparent, opaque, absorbent, non-absorbent, permeable, impermeable, research |
| **Make** | * Select suitable tools and equipment, explain choices in relation to required techniques and use accurately * Select appropriate materials, fit for purpose; explain choices * Work through plan in order. * Realise if product is going to be good quality * Measure, mark out, cut and shape materials/components with some accuracy * Assemble, join and combine materials and components with some accuracy * Apply a range of finishing techniques with some accuracy | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, purpose, components, tools (e.g. saw, screwdriver, card, wood), material characteristics, safe, clean, quality, accuracy, drill, bench hook, junior hack saw. |
| **Evaluate** | * Refer to design criteria while designing and making * Use criteria to evaluate product * Begin to explain how I could improve original design * Evaluate existing products, considering: how well they’ve been made, materials, whether they work, how they have been made, fit for purpose * Discuss by whom, when and where products were designed * Research whether products can be recycled or reused * Know about some inventors/designers/ engineers/chefs/manufacturers of ground-breaking products | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft, design criteria, opinion, designers, recycled, reuse, ground-breaking |
| **Technical Knowledge -**  **Material/ Structures** | * Measure carefully to avoid mistakes * Attempt to make product strong * Continue working on product even if original didn’t work * Make a strong, stiff structure | Measure, ruler, join, materials, strong, weak, material characteristics, rolling, folding, cuts, holes, structure. |
| **Technical Knowledge - Mechanisms** | * Select most appropriate tools / techniques * Explain alterations to product after checking it * Grow in confidence about trying new / different ideas. * Use levers and linkages to create movement * With support, use pneumatics to create movement | Levers, slides, wheels, axles, alterations, linkages, movement, pneumatics |
| **Technical Knowledge - Textiles** | * Add to prints with stitching, drawings etc. * Continue to develop their skills in sewing to add detail (blanket stitch, cross stitch). * Create tie dye pieces mixing two dyes together. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Explain how to be safe/hygienic * Think about presenting product in interesting/ attractive ways * Understand ingredients can be fresh, pre-cooked or processed * Begin to understand about food being grown, reared or caught in the UK or wider world * Describe eat well plate and how a healthy diet=variety / balance of food and drinks * Explain importance of food and drink for active, healthy bodies * Prepare and cook some dishes safely and hygienically * Use some of the following techniques: peeling, chopping, slicing, grating, mixing, spreading, kneading and baking | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food, hygienic, diet, ingredients, animal, grown, caught, five a day, peel, cut, equipment, attractive, decoration, UK, Wider world, transport, balance, slicing, spread, knead, bake, reared, |
|  | **Technical Knowledge – Electrical systems** | * Use number of components in a circuit * Program a computer to control product | Circuit, program, control. |

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| **Year 5** | **Skills** | | **Vocabulary** |
| **Design** | * Use internet and questionnaires for research and design ideas * Take a user’s view into account when designing * Begin to consider needs/wants of individuals/groups when designing and ensure product is fit for purpose * Create own design criteria * Have a range of ideas * Produce a logical, realistic plan and explain it to others. * Use cross-sectional planning and annotated sketches * Make design decisions considering time and resources. * Clearly explain how parts of product will work. * Model and refine design ideas by making prototypes and using pattern pieces (E.g. dresses). * Use computer-aided designs | Ideas, product, purpose, diagrams, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, use, soft, tough, strong, weak, shiny, dull, need, requirements, create, order, equipment, drawings, annotated, sketch, prototype, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, property, use, different, hard, soft, tough, strong, weak, shiny, dull, rigid, brittle, transparent, opaque, absorbent, non-absorbent, permeable, impermeable, research, patterns, questionnaires, user, design criteria, cross-sectional planning, refine, pattern pieces. |
| **Make** | * Use selected tools/equipment with good level of precision * Produce suitable lists of tools, equipment/materials needed * Select appropriate materials, fit for purpose; explain choices, considering functionality * Create and follow detailed step by-step plan * Explain how product will appeal to an audience * Mainly accurately measure, mark out, cut and shape materials/components * Mainly accurately assemble, join and combine materials/components * Mainly accurately apply a range of finishing techniques * Use techniques that involve a small number of steps * Begin to be resourceful with practical problems | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, purpose, components, tools (e.g. saw, screwdriver, card, wood), material characteristics, safe, clean, quality, accuracy, , drill, bench hook, junior hack saw. |
| **Evaluate** | * Evaluate quality of design while designing and making * Evaluate ideas and finished product against specification, considering purpose and appearance. * Test and evaluate final product * Evaluate and discuss existing products, considering: how well they’ve been made, materials, whether they work, how they have been made, fit for purpose * Begin to evaluate how much products cost to make and how innovative they are * Research how sustainable materials are * Talk about some key inventors/designers/ engineers/ chefs/manufacturers of ground breaking products | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft, design criteria, opinion, designers, recycled, reuse, ground-breaking |
| **Technical Knowledge -**  **Material/ Structures** | * Select materials carefully, considering intended use of product and appearance * Explain how product meets design criteria * Measure accurately enough to ensure precision * Ensure product is strong and fit for purpose * Begin to reinforce and strengthen a 3D frame | Measure, ruler, join, materials, strong, weak, material characteristics, rolling, folding, cuts, holes, structure, appearance, design criteria, precision, 3D, reinforce, strengthen |
| **Technical Knowledge - Mechanisms** | * Refine product after testing * Grow in confidence about trying new / different ideas * Begin to use cams, pulleys or gears to create movement * With support, use hydraulics to create movement | Levers, slides, wheels, axles, alterations, linkages, movement, pneumatics, cams, pulleys, gears, hydraulics. |
| **Technical Knowledge - Textiles** | * Add to prints with stitching, drawings etc. * Continue to develop their skills in sewing to add detail (blanket stitch, cross stitch, French knot) and start to move towards embroidery sewing for detail and imagery (chain stitch, star, lazy daisy). * Experiment with a range of media, layering and overlapping, in order to create texture, effect and colour. * Work knew knowledge back into work and mix media. * Explore the history of Batik art and have the opportunity to create their own being inspired by what they have seen. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Explain how to be safe / hygienic and follow own guidelines * Present product well - interesting, attractive, fit for purpose * Begin to understand seasonality of foods * Understand food can be grown, reared or caught in the UK and the wider world * Describe how recipes can be adapted to change appearance, taste, texture, aroma * Explain how there are different substances in food / drink needed for health * Prepare and cook some savoury dishes safely and hygienically including, where appropriate, use of heat source * Use range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food, hygienic, diet, ingredients, animal, grown, caught, five a day, peel, cut, equipment, attractive, decoration, UK, Wider world, transport, balance, slicing, spread, knead, bake, reared, presentation, |
|  | **Technical Knowledge – Electrical systems** | * Incorporate switch into product * Confidently use number of components in circuit * Begin to be able to program a computer to monitor changes in environment and control product | Circuit, program, control, switch, components, monitor. |

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| **Year 6** | **Skills** | | **Vocabulary** |
| **Design** | * Draw on market research to inform design. * Use research of user’s individual needs, wants, and requirements for design. * Identify features of design that will appeal to the intended user. * Create own design criteria and specification. * Come up with innovative design ideas. * Follow and refine a logical plan. * Use annotated sketches, cross-sectional planning and exploded diagrams * make design decisions, considering, resources and cost * Clearly explain how parts of design will work, and how they are fit for purpose * Independently model and refine design ideas by making prototypes and using pattern pieces (e.g. dress making). * Use computer-aided designs | Ideas, product, purpose, diagrams, plan, models, design, materials, same, different, idea, nature, colours, shapes, texture, smells, feel, build, longer, shorter, heavier, lighter, rough/smooth, flat/bumpy, sharp/blunt, hard/soft, rigid/floppy, waterproof/not waterproof,bending, squashing, twisting and stretching, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, use, soft, tough, strong, weak, shiny, dull, need, requirements, create, order, equipment, drawings, annotated, sketch, prototype, fabric, cardboard, wood, metal, plastic, glass, rubber, elastic, twist, stretch, bend, squash, property, use, different, hard, soft, tough, strong, weak, shiny, dull, rigid, brittle, transparent, opaque, absorbent, non-absorbent, permeable, impermeable, research, patterns, questionnaires, user, design criteria, cross-sectional planning, refine, pattern pieces, appealing, logical, exploded diagram, cost. |
| **Make** | * Use selected tools and equipment precisely. * Produce suitable lists of tools, equipment, materials needed, considering constraints. * Select appropriate materials, fit for purpose; explain choices, considering functionality and aesthetics. * Create, follow, and adapt detailed step-by-step plans. * Explain how product will appeal to audience; make changes to improve quality. * Accurately measure, mark out, cut and shape materials/components. * Accurately assemble, join and combine materials/components. * Accurately apply a range of finishing techniques. * Use techniques that involve a number of steps. * Be resourceful with practical problems. | Tools, join, finish, measure, mark, cut, shape, materials, directional words, tall, small. Lines, stick, join, tools, safe, knives, spoons, forks, scissors, screwdriver, glue, join, build, shape, purpose, components, tools (e.g. saw, screwdriver, card, wood), material characteristics, safe, clean, quality, accuracy, , drill, bench hook, junior hack saw, constraints, functionality, assemble. |
| **Evaluate** | * Evaluate quality of design while designing and making; is it fit for purpose? * Keep checking design is best it can be. * Evaluate ideas and finished product against specification, stating if it’s fit for purpose * Test and evaluate final product; explain what would improve it and the effect different resources may have had * Do thorough evaluations of existing products considering: how well they’ve been made, materials, whether they work, how they’ve been made, fit for purpose * Evaluate how much products cost to make and how innovative they are * Research and discuss how sustainable materials are * Consider the impact of products beyond their intended purpose * Discuss some key inventors/designers/ engineers/ chefs/manufacturers of ground breaking products. | Materials, audience, use, good, not good, product, better, evaluate. What is evaluation? good, improve, problems, What has easy? What was hard? What is the same/different? Risks, technology, texture, hard, soft, design criteria, opinion, designers, recycled, reuse, ground-breaking, quality, specification, testing, innovative, sustainable. |
| **Technical Knowledge -**  **Material/ Structures** | * Select materials carefully, considering intended use of the product, the aesthetics and functionality. * Explain how product meets design criteria * Reinforce and strengthen a 3D frame | Measure, ruler, join, materials, strong, weak, material characteristics, rolling, folding, cuts, holes, structure, appearance, design criteria, precision, 3D, reinforce, strengthen |
| **Technical Knowledge - Mechanisms** | * Refine product after testing, considering aesthetics, functionality and purpose. * Incorporate hydraulics and pneumatics \*be confident to try new / different ideas. * Use cams, pulleys and gears to create movement. | Levers, slides, wheels, axles, alterations, linkages, movement, pneumatics, cams, pulleys, gears, hydraulics, functionality, purpose, aesthetics. |
| **Technical Knowledge - Textiles** | * Refine their skills in sewing to add detail (blanket stitch, cross stitch, French knot) and start to move towards embroidery sewing for detail and imagery (chain stitch, star, lazy daisy). * Experiment with a range of media by overlapping and layering in order to create texture, effect and colour. * Add decoration to create effect. | Texture (how does it feel?), thread, fabric, soft, hard, rough, smooth, shiny, weave, materials, fabric, over, under, design, detail, decorate, ink. |
| **Technical knowledge – food and nutrition** | * Understand a recipe can be adapted by adding / substituting ingredients * Explain seasonality of foods * Learn about food processing methods * Name some types of food that are grown, reared or caught in the UK or wider world * Adapt recipes to change appearance, taste, texture or aroma. * Describe some of the different substances in food and drink, and how they can affect health * Prepare and cook a variety of savoury dishes safely and hygienically including, where appropriate, the use of heat source. * Use a range of techniques confidently such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking. | Textures, clean, decorate, grate, zest, safe knives, sweet, savoury, vegetables, combine, Safe, five sense, food preparation tools (chopping board, pan, knives, spoon, fork etc), pour, blend, mix, stir, healthy, food, hygienic, diet, ingredients, animal, grown, caught, five a day, peel, cut, equipment, attractive, decoration, UK, Wider world, transport, balance, slicing, spread, knead, bake, reared, presentation, substitute, seasonality, processing, aroma. |
|  | **Technical Knowledge – Electrical systems** | * Use different types of circuit in product * Think of ways in which adding a circuit would improve product * Program a computer to monitor changes in environment and control product | Circuit, program, control, switch, components, monitor. |

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| **Key figures to consider (inventors/designers/ engineers/ chefs/manufacturers)** | |
| **Inventors** | The Wright Brothers (aeroplane)  Ruth Handler (Barbie Doll)  Steve Jobs (iPod)  Stephanie Kwolek: Invented Kevlar, a material used in bullet-proof vests.  Thomas Edison |
| **Architects** | Zaha Hadid  Sir Christopher Wren  Tom Wright |
| **Designers** | Coco Chanel  Alexander McQueen  Vivienne Westwood |
| **Engineers** | Hedy Lamarr (secret radio message in ww2)  Martha Coston (Flare signal)  Marissa Mayer (Googles first female computer engineer in 1999) |
| **Chefs** | Jamie Oliver  Mary Berry  Nadiya Hussain |
| **Manufacturers.** | Apple  Volkswagen  Harbio |