



### **A Progression of Skills – Foundation Stage**

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| <b>3-4 Year Olds</b>        | Explore different materials freely, to develop their ideas about how to use them and what to make.<br><br>Develop their own ideas and then decide which materials to use to express them.<br><br>Join different materials and explore different textures. |
| <b>Reception Children</b>   | Return to and build on their previous learning, refining ideas and developing their ability to represent them.<br><br>Create collaboratively, sharing ideas, resources and skills.  |
| <b>Early Learning Goals</b> | Safely use and explore a variety of material, tools and techniques, experimenting with colour, design, texture, function and form.  |



## **A Progression of Skills - Year 1**

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| <b>Food:</b><br>Preparing Fruit                    | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Examine a range of fruit and respond to questions eg what is it called?</li> <li>2. Handle, smell and taste fruit in order to describe them through talking and drawing.</li> <li>3. With adult support, evaluate existing products to determine likes &amp; dislikes.</li> </ol>   |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>4. Carry out basic food hygiene practices when handling food.</li> <li>5. Use simple utensils and practise food-processing skills such as washing, grating, peeling, slicing, squeezing.</li> </ol>  |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>6. With support, agree a set of design criteria for a product eg <i>Who/what is the product for?</i></li> <li>7. Use talk when planning a product; answering questions like <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i></li> <li>8. With support, identify the main stages in making.</li> <li>9. With support, evaluate the final product against the intended purpose and with the intended user.</li> </ol>  |
| <b>Textiles:</b><br>Templates & joining techniques | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Investigate and evaluate existing products linked to the chosen project.</li> <li>2. Make drawings of existing products, stating the user and purpose.</li> <li>3. Identify and label, if appropriate, the fabrics, fastenings and techniques used.</li> </ol>  |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>4. Investigate different fabrics to determine which is best for the purpose of the product.</li> <li>5. Use a template or simple paper pattern (using prepared teacher aid or children's own)</li> <li>6. Use appropriate tools to mark out, tape or pin the fabric to the templates.</li> <li>7. Cut out fabric pieces for the product.</li> <li>8. Use joining techniques e.g. running stitch including threading own needle, stapling, tying and gluing.</li> <li>9. Talk about the advantages and disadvantages of each joining technique.</li> <li>10. Use finishing techniques e.g. sewing buttons, 3-D fabric paint, gluing sequins, printing.</li> </ol> |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>11. Identify the purpose and user of the product.</li> <li>12. Create design criteria with the teacher</li> <li>13. Generate a range of ideas.</li> <li>14. Use talk, drawings and mock-ups to develop and communicate ideas.</li> <li>15. Evaluate ongoing work and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed.</li> </ol>  |
| <b>Structures:</b><br>Freestanding structures      | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Use the local environment to explore structures</li> <li>2. Draw or photograph existing structures and label with the correct technical vocabulary e.g. wall, tower, framework, base, joint, metal, wood, plastic, brick, triangle, square, rectangle, cuboid, cube.</li> </ol>   |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>3. Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools using new/reclaimed materials</li> <li>4. Discuss the suitability of materials for their products according to their characteristics.</li> <li>5. Build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks etc</li> <li>6. Fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins.</li> </ol>   |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>7. Identify the purpose and user of the product.</li> <li>8. Create design criteria with the teacher</li> <li>9. Generate a range of ideas.</li> <li>10. Use talk, drawings and mock-ups to develop and communicate ideas with construction kits and other materials.</li> <li>11. With the teacher, plan the order in which the structure will be made.</li> <li>12. Evaluate ideas and final products against original design criteria.</li> </ol>   |



## **A Progression of Skills - Year 2**

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| <b>Food:</b><br><br>Preparing Vegetables     | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Examine a range of vegetables and respond to questions eg what is it called?</li> <li>2. Handle, smell and taste vegetables in order to describe them through talking and drawing.</li> <li>3. With adult support, evaluate existing products to determine likes &amp; dislikes.</li> </ol>   |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>4. Carry out basic food hygiene practices when handling food.</li> <li>5. Use simple utensils and practise food-processing skills such as washing, grating, peeling, slicing, squeezing.</li> <li>6. Begin to explain healthy eating advice using <i>The eatwell plate</i>.</li> </ol>   |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>7. With support, agree a set of design criteria for a product eg <i>Who/what is the product for?</i></li> <li>8. Use talk and drawings when planning a product; answering questions like <i>What will you need? What fruit/vegetable will you need? How much will you need? How will you present the product?</i></li> <li>9. With support, identify the main stages in making.</li> <li>10. With support, evaluate the final product against the intended purpose and with the intended user.</li> </ol>  |
| <b>Mechanisms:</b><br><br>Wheels and Axles   | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Explore and evaluate a range of wheeled products such as toys and everyday objects.</li> <li>2. Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders.</li> <li>3. Identify how wheels and axles are used in daily life.</li> <li>4. Use books to introduce relevant vocabulary and to emphasise user and purpose.</li> </ol>   |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>5. Use construction kits with wheels and axles to make a product that moves.</li> <li>6. Mark out, hold, cut and join materials and components correctly.</li> <li>7. Assemble some examples of wheel, axle, axle holder combinations.</li> </ol>  |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>8. Identify a user and purpose for the product and generate simple criteria with support.</li> <li>9. Generate, develop and communicate ideas e.g. through talk and drawing.</li> <li>10. Make a wheel and axle product using design ideas and criteria.</li> <li>11. Add finishing techniques to the product using information and communication technology such as clip art, word processing, paint or simple drawing programs.</li> <li>12. Evaluate the finished product, communicating how it works and how it matches the design criteria, including any changes they made.</li> </ol> |
| <b>Mechanisms:</b><br><br>Sliders and Levers | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>1. Explore and evaluate a collection of books and everyday products that have moving parts, including those with levers and sliders</li> </ol>   |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>2. Develop knowledge and skills by replicating the slider and lever teaching aids.</li> <li>3. Add pictures to their mechanisms.</li> </ol>  |

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|  | Design, Make and Evaluate | <ol style="list-style-type: none"> <li>Identify user, purpose and how the product will move ie lever or slider.</li> <li>Generate simple design criteria with the teacher</li> <li>Develop ideas through talking, drawing and making mock-ups of ideas with paper and card.</li> <li>Discuss the intended finishing techniques e.g. using digital text and graphics, paint, felt tipped pens or collage.</li> <li>Talk about the order in which the mechanisms will be made.</li> <li>Evaluate developing ideas and final products against the original design criteria.</li> </ol> |
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### **A Progression of Skills - Year 3**

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| <b>Food:</b><br>A Healthy & Varied Diet      | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>Investigate a range of food products, linking to the principles of a healthy diet using <i>The eatwell plate</i>.</li> <li>Carry out sensory evaluations on the contents of food products.</li> <li>Record results using a table.</li> <li>Use appropriate words to describe the taste/smell/texture/appearance.</li> </ol>  |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>Select and use a range of utensils and use a range of techniques to prepare ingredients hygienically eg the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.</li> <li>Demonstrate basic food hygiene practices when handling food including the importance of following instructions to control risk.</li> </ol>  |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>Identify the purpose of their product and who the product will be for.</li> <li>With support, identify a set of design criteria within a context that is authentic and meaningful.</li> <li>Generate a range of ideas through discussion and annotated sketches</li> <li>Identify the main stages in making the food product.</li> <li>Evaluate the final product against the intended purpose and user.</li> </ol>  |
| <b>Textiles:</b><br>2-D Shape to 3-D Product | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>Investigate a range of textile products that have a selection of stitches, joins, fabrics, finishing techniques, fastenings and purposes, linked to the product they will design, make and evaluate.</li> <li>Think about products from the past and what changes have been made in textile production and products e.g. the invention of zips and Velcro.</li> <li>Disassemble appropriate textiles products to gain an understanding of 3-D shape, patterns and seam allowances.</li> </ol>  |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>Practise sewing two small pieces of fabric together, demonstrating the use of, and need for, seam allowances.</li> <li>Create a paper pattern using 2-D shapes.</li> <li>Consider whether fabrics are suitable for the chosen purpose and user.</li> <li>Test out a range of decorative finishing techniques e.g. appliqué, embroidery, fabric pens/paints, printing.</li> </ol>   |
|  | Design, Make and Evaluate               | <ol style="list-style-type: none"> <li>Create a design brief, supported by the teacher, which is authentic and meaningful.</li> <li>Discuss the intended user, purpose and appeal of their product.</li> <li>Sketch and annotate a range of possible ideas, constantly encouraging creative thinking.</li> <li>Produce mock-ups and prototypes of the chosen product.</li> <li>Plan the main stages of making e.g. using a flowchart or storyboard.</li> <li>Evaluate as the process is undertaken and the final product in relation to the design brief and criteria.</li> </ol> |
| <b>Structures:</b><br>Shell Structures       | Investigative and Evaluative Activities | <ol style="list-style-type: none"> <li>Investigate a collection of different shell structures including packaging.</li> <li>Take a small package apart identifying and discussing parts of a net including the tabs.</li> <li>Evaluate existing products to determine their effectiveness.</li> <li>Evaluate graphics eg colours/impact of style/logo/size of font.</li> </ol>  |
|  | Focused Tasks                           | <ol style="list-style-type: none"> <li>Using a simple drawing software such as Techsoft 2D Primary or Microsoft Word explore the interface and drawing tools to practise drawing and manipulating shapes such as squares.</li> <li>Use software to open existing drawings including nets and to draw nets of their own.</li> </ol>  |

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| <p style="text-align: center;">OR</p> <p><b>Mechanical Systems:</b></p> <p>Pneumatics</p> |   | <p>7. Explore different fill and font tools available.</p> <p>8. Practise making nets out of card to create 3-D shapes.</p> <p>9. Experiment with assembling pre-drawn nets in numerous ways using scoring, cutting and assembling techniques.</p> <p>10. Construct a simple box and show how a window can be cut out and acetate sheet added</p>  |
|   | Design, Make and Evaluate               | <p>11. Develop a design brief which is authentic and meaningful.</p> <p>12. Identify the uses and purposes of their shell structure</p> <p>13. Develop a design using computer-aided design (CAD) software to create nets.</p> <p>14. Print out a net to develop prototypes in order to evaluate and refine ideas.</p> <p>15. Identify the main stages of making and the appropriate tools and skills needed for the project.</p> <p>16. Evaluate throughout and the final products against the intended purpose and with the intended user.</p> |
|   | Investigative and Evaluative Activities | <p>1. Investigate, analyse and evaluate familiar objects that use air to make them work e.g. bicycle pump, balloon, inflatable swimming aids, foot pump for inflating an air bed.</p>  |
|   | Focused Tasks                           | <p>2. Demonstrate how to assemble the systems using syringes, tubing, balloons and plastic bottles.</p> <p>3. Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.</p> <p>4. Try out, draw &amp; answer questions about three systems: a) Balloon connected to a washing-up liquid bottle. b) Two syringes of the same size connected together. c) Two syringes of different sizes connected together.</p>  |
|   | Design, Make and Evaluate               | <p>5. With support, develop a design brief which is authentic and meaningful.</p> <p>6. Discuss the purpose of the products they will be designing and making and who the products will be for.</p> <p>7. Generate a range of ideas</p> <p>8. Using annotated sketches and prototypes, develop, model and communicate ideas.</p> <p>9. Evaluate the final products against the intended purpose and with the intended user,</p>  |



## **A Progression of Skills - Year 4**

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| <b>Food:</b><br><br>A Healthy & Varied Diet                    | Investigative and Evaluative Activities | 1. Investigate a range of food products, linking to the principles of a varied and healthy diet using <i>The eatwell plate</i> .<br>2. Carry out sensory evaluations on the contents of food products.<br>3. Record results using a table.<br>4. Use appropriate words to describe the taste/smell/texture/appearance.<br>5. Find out how a variety of ingredients used in products are grown and harvested, reared, caught and processed e.g. <i>Where and when are the ingredients grown? Where do different meats/fish/cheese/eggs come from? How and why are they processed?</i>   |
|  | Focused Task                            | 6. Select and use a range of utensils and use a range of techniques to prepare ingredients hygienically eg the bridge and claw technique, grating, peeling, chopping, slicing, mixing, spreading, kneading and baking.<br>7. Demonstrate basic food hygiene practices when handling food including the importance of following instructions to control risk.   |
|  | Design, Make and Evaluate               | 8. Identify the purpose of their product and who the product will be for.<br>9. With support, identify a set of design criteria within a context that is authentic and meaningful.<br>10. Generate a range of ideas through discussion and annotated sketches<br>11. Identify the main stages in making the food product, before preparing/cooking the product including the ingredients and utensils they will need.<br>12. Evaluate during the making process and the final product against the intended purpose and user, reflecting on the design criteria previously agreed.  |
| <b>Mechanical Systems:</b><br><br>Levers and Linkages          | Investigative and Evaluative Activities | 1. Investigate, analyse and evaluate books and, where available, other products which have a range of lever and linkage mechanisms.  |
|  | Focused Tasks                           | 2. Explore a range of lever and linkage mechanisms using prepared teaching aids.<br>3. Develop knowledge and skills by replicating one or more of the teaching aids.<br>4. Demonstrate the correct and accurate use of measuring, marking out, cutting, joining and finishing skills and techniques.   |
|  | Design, Make and Evaluate               | 5. With support, develop a design brief which is authentic and meaningful.<br>6. Identify the purpose of their products and who the product will be for.<br>7. Generate a range of ideas.<br>8. Using annotated sketches and prototypes, develop, model and communicate their ideas.<br>9. Evaluate the final products against the intended purpose and with the intended user   |
| <b>Electrical Systems:</b><br><br>Simple circuits and switches | Investigative and Evaluative Activities | 1. Discuss, investigate and, where practical, disassemble different examples of relevant battery-powered products, including those which are commercially available<br>2. Investigate examples of switches, including those which are commercially available, which work in different ways e.g. push-to-make, push-to-break, toggle switch.<br>3. Know about the dangers of mains electricity.   |
|  | Focused Tasks                           | 4. Recap how to make manually controlled, simple series circuits with batteries and different types of switches, bulbs and buzzers. Discuss which of the components in the circuit are input devices e.g. switches, and which are output devices e.g. bulbs and buzzers.<br>5. Find a fault in a simple circuit and correct it<br>6. Use a simple computer control program with an interface box or standalone control box to physically control output devices e.g. bulbs and buzzers.<br>7. Make a variety of switches by using simple classroom materials e.g. card.<br>8. Test their switches in a simple series circuit.  |
|  | Design, Make and Evaluate               | 9. With support, develop a design brief with the children within a context which is authentic and meaningful.<br>10. Identify the purpose of the battery-powered products that they will be designing.<br>11. Generate a range of ideas.<br>12. Agree on design criteria that can be used to guide the development and evaluation of the products, including safety features.<br>13. Use annotated sketches, cross-sectional and exploded diagrams, to develop, model and communicate ideas.<br>14. Consider the main stages in making and testing before assembling high quality products.<br>15. Evaluate throughout and the final products against the intended purpose and with the intended user, drawing on the design criteria previously agreed. |



## **A Progression of Skills - Year 5**

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| <b>Food:</b><br><br>Celebrating Culture and Seasonality | Investigative and Evaluative Activities | 1. Use first hand experiences to carry out research into existing products<br>2. Carry out sensory evaluations of a variety of existing food products.<br>3. Present findings/results in tables/graphs/charts.<br>4. Answer questions about their findings e.g. <i>What ingredients help to make the product spicy/crisp/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product?</i>  |
|   | Focused Tasks                           | 5. Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.<br>6. Demonstrate how to use appropriate utensils and equipment safely and hygienically.   |
|   | Design, Make and Evaluate               | 7. With support, develop a design brief that is authentic and meaningful.<br>8. Identify the purpose of the product and the intended user.<br>9. Generate a range of ideas and agree on design criteria.<br>10. Communicate ideas using annotated sketches & discussion.<br>11. Record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs.<br>12. Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.   |
| <b>Structures:</b><br><br>Frame Structures              | Investigative and Evaluative Activities | 1. Investigate and make annotated drawings of a range of portable and permanent frame structures, e.g. tents, bus shelters, umbrellas.<br>2. Use photographs and web-based research.<br>3. Research key events and individuals related to their study of frame structures e.g. Stephen Sauvestre – a designer of the Eiffel Tower.  |
|   | Focused Tasks                           | 4. Use a construction kit consisting of plastic strips and paper fasteners to build 2-D frameworks.<br>5. Compare the strength of square frameworks with triangular frameworks.<br>6. Use paper tubes and masking tape or paper straws with pipe cleaners to build 3-D frameworks such as cubes, cuboids and pyramids.<br>7. Demonstrate the accurate use of tools and equipment.<br>8. Develop skills and techniques using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate.<br>9. Demonstrate skills and techniques for accurately joining framework materials together e.g. paper straws, square sectioned wood.   |
|   | Design, Make and Evaluate               | 10. Generate innovative ideas, drawing on research.<br>11. Produce a detailed, step-by-step plan, listing tools and materials.<br>12. Model ideas first using materials such as paper, card and paper straws.<br>13. Evaluate work and completed product, drawing on design specification, and thinking about the intended purpose and user.  |
| <b>Mechanical Systems:</b><br><br>Pulleys or Gears      | Investigative and Evaluative Activities | 1. Investigate, analyse and evaluate existing everyday products and existing or pre-made toys that incorporate gear or pulley systems.<br>2. Use observational drawings and questions to develop understanding of each product.   |
|   | Focused Tasks                           | 3. Using a construction kit, investigate combinations of two different sized pulleys to learn about direction and speed of rotation or explore combinations of two different size gears meshed together.<br>4. Build a working circuit that incorporates a battery, a motor and a handmade switch, such as a reversing switch.<br>5. Demonstrate the accurate use of tools and equipment including cutting and stripping wire, and making secure electrical connections.<br>6. Know about the dangers of mains electricity.<br>7. Draw a pictorial representation of the circuit or draw a circuit diagram using correct symbols.<br>8. Develop measuring, marking, cutting, shaping and joining skills using junior hacksaws, G-clamps, bench hooks, square section wood, card triangles and hand drills to construct wooden frames, as appropriate. |



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|  | Design, Make and Evaluate | <ol style="list-style-type: none"><li>9. Develop an authentic and meaningful design brief with support.</li><li>10. Generate innovative ideas by carrying out research including surveys, interviews and questionnaires and develop a design specification for a product</li><li>11. Communicate ideas through detailed, annotated drawings from different views and/or exploded diagrams.</li><li>12. Produce detailed step-by-step plans and lists of tools, equipment and materials needed.</li><li>13. Use a range of decorative finishing techniques to ensure a well finished final product that matches the intended user and purpose.</li><li>14. Evaluate throughout and the final product in use, comparing it to the original design specification.</li></ol> |
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## **A Progression of Skills - Year 6**

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| <b>Food:</b><br><br>Celebrating Culture and Seasonality  | Investigative and Evaluative Activities | 1. Use first hand and secondary sources to carry out research into existing products<br>2. Carry out sensory evaluations of a variety of existing food products and ingredients relating to the project.<br>3. Present findings/results in tables/graphs/charts or by using evaluative writing.<br>4. Answer questions about their findings e.g. <i>What ingredients help to make the product spicy/crisp/crunchy etc? What is the impact of added ingredients/finishes/shapes on the finished product?</i>   |
|  | Focused Tasks                           | 5. Demonstrate how to measure out, cut, shape and combine e.g. knead, beat, rub and mix ingredients.<br>6. Demonstrate how to use appropriate utensils and equipment safely and hygienically.<br>7. When using a basic dough recipe, explore making different shapes to change the appearance of the food product e.g. <i>Which shape is most appealing and why?</i>  |
|  | Design, Make and Evaluate               | 8. With support, develop a design brief that is authentic and meaningful.<br>9. Identify the purpose of the product and the intended user.<br>10. Generate a range of ideas and agree on design criteria.<br>11. Communicate ideas using annotated sketches & discussion.<br>12. Record the steps, equipment, utensils and ingredients for making the food product drawing on the knowledge, understanding and skills learnt through IEAs and FTs.<br>13. Evaluate the work as it progresses and the final product against the intended purpose and user reflecting on the design specification previously agreed.  |
| <b>Textiles:</b><br><br>Combining Different Fabric Shapes<br><br>(including computer-aided design) | Investigative and Evaluative Activities | 1. Investigate and evaluate a range of existing textiles products and how they have been constructed using disassembly.<br>2. Investigate work by designers and their impact on fabrics and products.<br>3. Investigate properties of textiles e.g. exploring insulating properties, water resistance, wear and strength of textiles.   |
|  | Focused Tasks                           | 4. Develop computer-aided design (CAD) skills by using pattern making software to generate, modify, scale, save and print pattern pieces.<br>5. Recognise that designs can be easily modified and repeated on the computer without the need for a physical product.<br>6. Investigate using art packages on the computer to design prints that can be applied to textiles using iron transfer paper.<br>7. Develop skills of 2-D paper pattern making using CAD and create a 3-D paper or Dipryl mock-up of a chosen product.<br>8. Develop skills of threading needles and joining textiles using a range of stitches,<br>9. Develop skills of sewing textiles by joining right side together and making seams.<br>10. Investigate how to sew and shape curved edges by snipping seams, how to tack or attach wadding or stiffening.<br>11. Learn how to start and finish off a row of stitches.   |
|  | Design, Make and Evaluate               | 12. Generate ideas by carrying out research using surveys, interviews, questionnaires and the internet.<br>13. Develop a design specification for their product.<br>14. Communicate ideas through detailed, annotated drawings from different perspectives.<br>15. Produce step-by-step plans, lists of tools equipment, fabrics and components needed.<br>16. Develop designs using CAD software to produce pattern pieces and art programmes to produce decoration and design prints that can be applied to textiles.<br>17. Incorporate simple computer-aided manufacture (CAM) if appropriate e.g. printing on fabric.<br>18. Use a range of techniques to ensure a well-finished final product that matches the intended user and purpose.<br>19. Evaluate work and the final product in use, comparing the final product to the original design specification.<br>20. Communicate the evaluation in various forms e.g. writing for a particular purpose, giving a well-structured oral evaluation, speaking clearly and fluently. |
|  | Investigative and Evaluative Activities | 1. Research a range of relevant products that respond to changes in the environment using a computer control program such as automatic nightlights, alarm systems, security lighting  |

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| <b>Electrical Systems</b><br><br>More complex switches and circuits |                           | 2. Investigate electrical sensors such as light dependent resistors (LDRs) and a range of switches such as push-to-make switches, push-to-break switches, toggle switches, micro switches and reed switches.<br>3. Use each component to control a bulb in a simple circuit.<br>4. Know about the dangers of mains electricity.   |
|   | Focused Tasks             | 5. Recap measuring, marking out, cutting and joining skills with construction materials that children will need to create their electrical products.<br>6. Practise methods for making secure electrical connections e.g. using automatic wire strippers, twist and tape electrical connections, screw connections and connecting blocks.<br>7. Explore a range of electrical systems that could be used to control their products.<br>8. Drawing on related computing activities, ensure that children can write computer control programs that include inputs, outputs and decision making.<br>9. Test out the programs using electrical components connected to interface boxes or standalone boxes.   |
|   | Design, Make and Evaluate | 10. With support, develop an authentic and meaningful design brief.<br>11. Generate innovative ideas by drawing on research and develop a design specification for their product, carefully considering the purpose and needs of the intended user.<br>12. Communicate ideas through annotated sketches, pictorial representations of electrical circuits or circuit diagrams.<br>13. Produce detailed step-by-step plans and lists of tools, equipment and materials needed.<br>14. Create and modify a computer control program to enable the product to work automatically in response to changes in the environment.<br>15. Critically evaluate throughout and the final product, comparing it to the original design specification.<br>16. Test the system to demonstrate its effectiveness for the intended user and purpose. |