**DT Skills and Progression**

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|  | **Key Stage 1** | **Year 3 and 4** | **Year 5 and 6** |
| **Mastering Practical skills** | | | |
| **Materials and Construction** | -Know what materials can be used for my structure  - How **freestanding structures** can be made stronger, stiffer and more stable  - Know what a join is and can use one  - Practise joining materials by gluing, screwing or nailing to make and strengthen products  -Find out how to make materials for structure stronger (folding, rolling and joining, columns and triangles)  -Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).  -Measure and mark out materials with care and increasing accuracy (y2-to the nearest cm)   -Cut materials safely  -Be careful to make work look as neat as possible | -Select appropriate materials and appropriate joins  - Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs)  -Use scoring and folding to shape materials accurately  -Make cuts accurately (scissors and saws)  -Make holes accurately (drill, punch)  -Join materials to make products using both permanent and temporary fastenings  -Choose suitable techniques to construct products or to repair items  -How to make **strong, stiff shell structures**  -Methods of working are increasingly precise aiming for a high-quality finish  -Measure and mark out materials with care and increasing accuracy (to the nearest mm)  - I can incorporate art skills to apply texture and design to my products | -Select from a variety of materials best suited to my design, showing an understanding of the qualities of materials needed  How to reinforce and strengthen **3D framework structure**  -Use scoring, and folding to shape materials accurately.  -Make cuts accurately and reject pieces that are not accurate and improve my technique.  -Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape)  -Develop a range of practical skills to create products; cutting, drilling, screwing, nailing, gluing, filing and sanding  -Select joins that are strong and stable, giving extra strength to products.  -Some joins are flexible to allow for dismantling or folding.  -Methods of working are precise so that products have a high-quality finish.  *-Use computer programming when creating a product*  *-Compare and contrast the work of different designers (e.g. historical and modern)*  *-Give reasons for the decisions made by the designer* |
| **Mechanics** | -Explore how moving objects work  -Look at sliders and levers (year 1) and wheels and axels (year 2) and create a product using these mechanisms | -Know the application of mechanisms to create movement  -Create a product using levers and linkages to create a moving product  -Products have a good finish so that a user will find it both useful and attractive. | -Create a product that convert rotary motion to linear using cams.  -Products are well finished in a way that would appeal to users  -Use innovative combinations of electronics (or computing) and mechanics in product designs, for example the use of Crumble software (year 6) |
| **Electricals and Electronics** | -Look at various electrical products and how they work  -Diagnose faults in battery operated devices – eg, low battery, terminal damage, water damage  Look at the use of electronics in the local environment- timers, sensors eg (gates/ traffic lights) | - Create a functional product using simple electrical circuit; using both a series and parallel circuit (e.g. to illuminate or create motion)  -Combine a number of components well in my product  -Explore the use of electronics in the local environment- timers, sensors eg (gates/ traffic lights) | -Investigate more deeply the use of electronics in the local environment- timers, sensors e.g. (gates/ traffic lights)  -Create a functional product using more complex circuits and components; using switches and variable resistance to alter the way electrical products behave (dim lights, alter speed)  Create circuits using electronic kits that employ a number of components e.g. LEDs, resistors, transistors and chips  -Product is improved after testing.  -Use innovative combinations of electronics (or computing) and mechanics in product designs, for example the use of Crumble software (year 6) |
| **Textiles** | -Know that textiles have different properties: touch, insulation, texture and waterproof  -Select the appropriate textile so that it does the job I want it to  -Describe textiles by the way they feel  -Shape textiles using templates  -Measure, mark out and cut fabric to create a product  -Join fabrics using glue and *running stitch*  -Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing)  -Make sure my work is neat and tidy | -Select the appropriate textile(s) for my product.  -Use sharp scissors accurately to cut textiles  -Know that the texture and other properties of materials affect choice  -Make a textile product considering the intended users’ and for the purpose   -Join textiles with *appropriate* *stitching* to help create a product that is sturdy and fit for purpose  -Understand the need for a seam allowance   -Combine materials to add strength or visual appeal  - Select the most appropriate techniques to decorate textiles | - Create a textile product with an awareness of commercial appeal  -Experiment with a range of materials until I find the right mix of affordability, appeal and appropriateness for the job  -Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion)  -Mark out using patterns and templates and create objects that employ a seam allowance (such as a cushion)  -Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration), using art skills of stitching, embroidering and plaiting to make durable and desirable products. |
| **Food/Cooking in the Curriculum** | -Cut, peel or grate ingredients safely and hygienically  -Measure or weigh using measuring cups or electronic scales  -Be aware of hygiene for cooking  -Assemble or cook ingredients, following a recipe with support  -Use the basic principles of a healthy diet   -Be aware there are different ways to cook  -Recognise that all foods come from plants or animals   -Understand where food comes from e.g. a farm, the sea  -Recognise that food can be purchased or grown at home/school  -Be able to talk about foods they like or dislike  -Talk about people’s food choices based on preferences, seasons, time of day, intolerance, religion, setting  -Be aware that some foods have labels that contain information to help making a choice | -Cut, peel or grate ingredients safely and hygienically  -Measure ingredients to the nearest gram accurately  - Following a recipe, assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking)  - Prepare and cook mainly savoury dishes  -Prepare ingredients hygienically using appropriate utensils.  -Select ingredients for my product with reasons  -Apply the principles of a healthy, varied diet  -Use knowledge of the food groups to plan a meal  -Understand how a variety of ingredients are grown, reared, caught and processed  - Know the basic steps in producing food  -Talk about food choices including allergies and religions  -Be aware that some foods have labels that contain information to help making a choice | -Cut, peel or grate ingredients safely and hygienically  -Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.  - Following a recipe, assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking)  - Prepare and cook mainly savoury dishes, using a range of techniques, grill, boil, fry and bake  -Create and refine recipes, including ingredients, methods, cooking times and temperatures  Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms)  -Understand how a variety of ingredients are grown, reared, caught and processed  -Talk about people’s food choices including allergies, religion etc  -Read and make use of the main information on food and drink labels  -Consider cost when shopping for food  -Explore the factors involved in food choice and how it may be affected by availability, seasonality, need, cost, packaging, origin, culture, religion, allergy, intolerance, peer pressure  -Be aware that advertising can influence what they choose to eat  -Be aware of the importance of portion sizes  -Know where different crops can be found around the world  -understand the concept of carbon footprints  -Know different cultures have different diets |
| **Design, Make, Evaluate and Improve** | -Describe a product (who is it for, what is made from, how is it made, how it works)  - Design products that have a clear purpose and an intended user.  -Talk about their own and others’ product (features, design, opinion) and describe how their product works  -Explain why they chose certain materials, techniques and tools  -Make products, refining the design as work progresses.  - Begin to use CAD software to design e.g. SketchUp (Year 2) | -Begin to research and evaluate existing products to inform planning, understanding that products are designed for a purpose (e.g. a problem, an audience, an event)  -Design with purpose by identifying opportunities to design  -Talk about own and others’ work (features, design, opinion) ---Explain why they chose certain materials, techniques and tools  - Identify what is working well and what can be improved and then refine work and techniques accordingly as work progresses, continually evaluating the product design  -Use CAD software to design and represent product designs e.g. Sketch Up, Ikea website | -Research and evaluate existing products giving reasons for the decisions of the designers (materials, design, tools, techniques)  -Use the ideas from current designers to help with plans  -Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).  -Make products through stages of prototypes, making continual refinements  -Ensure products have a high-quality finish, using art skills where appropriate  -Reflect on their own designs and develop them bearing in mind the way they will be used (during the process)  -Use prototypes, cross-sectional diagrams and CAD software to represent designs. |
| **Take inspiration from design throughout history** | -Know what a designer does and know the names of some British designers  -Explore objects and designs of some British designers, saying what they like and dislike and thinking carefully about how they have been created | - Identify designers from all areas of study; including local designers, British designers and designers from history  - Explore their work, discussing the tools, techniques and design used by the designer to help them generate ideas for their own designs  -Improve upon the work of existing designers, giving reasons for their thinking  -Disassemble products to understand how they work. | - Identify designers from all areas of study; including local designers, British designers and designers from history  - Explore their work, discussing the tools, techniques and design used by the designer to help them generate ideas for their own designs  -Give reasons for the decisions made by the designer  -Know how key events and individuals have influenced the world (in terms of products)  -Compare and contrast the work of different designers (e.g. historical and modern)  - In their own designs, they combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.  -Evaluate the design of products, suggesting improvements on the work of existing designers’ products and use this to create innovative designs, improving the user experience |

* Extra requirements to meet the Healthy Schools Award – taken from Core Competencies for Young People at Key Stages 1 &2 (May also be taught through our Science/PSHE curriculum)