Generative learning in Design and Technology

Subject lead: K Fleming

Progression in skills— Developing, planning and communicating ideas

FS1	•
FS2	• I can design art/a product thinking about colour, texture and function. (CwM) • I use talk to organise my thoughts (S) • I can say what I think. (LAU) • I can ask questions to help me understand. (LAU)
Year 1	• Identify key features of an existing product • Think of ideas of their own • Plan and design a purposeful, functional product using pictures and labels • Explain their ideas through a range of medias – (Orally/ICT/templates/mock-ups and drawings)
Year 2	• Generate ideas through comparing existing products • Plan and design a purposeful, innovative product using pictures, diagrams and words • Plan and choose the most appropriate tools and materials and explain their choices
Year 3	• Plan their design using accurate diagrams and labels • Plan the equipment/tools needed and give reasons why • Start to order the main stages of making their product • Identify a design criteria and establish a purpose/audience for their product.
Year 4	• Create a final design for their product based on initial ideas and revisions • Create a detailed plan considering their target audience, design criteria and intended purpose.
Year 5	• Survey their target audience and use this to generate ideas • Take a user's view into account when designing • Produce a detailed step-by-step plan for their design method • Suggest some alternative designs and compare the benefits and drawbacks to inform the design process and outcome • Begin to understand how key events/individuals in DT have helped shape the world
Year 6	• Use a range of information and research to inform their design • Use market research to inform plans • Justify their plan to someone else • Consider culture and society in their designs • Consider the use of product when selecting materials and work within constraints • Think about how their product could be marketed through packaging and advertising • Understand how key events/individuals in DT have helped shape the world

Progression in skills- Working with tools, equipment, materials and components to make quality products

FS1	• I can choose materials to begin to create my own ideas. (CwM) • I can start to join materials together. (CwM) • I can use a range of art materials to achieve a planned effect. (CwM)
FS2	• I can use various tools for artwork and design including one-handed tools e.g. playdough tools. (CwM) • I can select my own art and design materials to create with for a purpose. (CwM) • I can safely use tools e.g. scissors. (CwM and FMS) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.— ELG (CwM) • Use a range of small tools e.g scissors, paint brushes, cutlery (FMS)
Year 1	• Explain what they are making • Select appropriate resources and tools (eg cutting/shaping/joining and finishing) • Explain which tools, materials and components they are using and why (including construction/textiles/ingredients) • Use tools safely
Year 2	• Join materials/components together in different ways • Measure materials to use in a model and structure drawing on mathematical knowledge (inc. construction/textiles/ingredients) • Use joining/folding/rolling to make their product stronger
Year 3	• Use equipment and tools accurately and safely • Select the most appropriate tools/materials and techniques to use • Manipulate materials using a range of tools and equipment (eg cutting/shaping/joining and finishing) • Measure, cut and assemble with increasing accuracy
Year 4	• Use equipment and tools with increased accuracy and safety • Select the most effective materials, tools and techniques to use • Manipulate materials effectively using a range of tools and equipment • Measure, cut and assemble accurately
Year 5	• Choose appropriate tools and materials to ensure that the final product will appeal to the audience • Use a range of tools and equipment with good accuracy and effectiveness, within established safety parameters
Year 6	• Choose appropriate tools and materials to ensure that the final product will appeal to the audience • Use a range tools and equipment with good accuracy and effectiveness within established safety parameters

Progression in skills- Evaluating processes and products

FS1	•
FS2	• I can talk about my artwork or designs linked to some of the materials/techniques I used. (CwM) • I can explain what I have made. (CwM) • I can talk about how I made it. (CwM) • I can use talk to share what I think (S) • ELG - Share their creations explaining the processes they have used
Year 1	• Explore and evaluate a range of existing products • Describe how their products work • Identify success and next steps against design criteria
Year 2	• Assess how well their product works against design criteria • Explain how they can improve a product, including their own
Year 3	• Think about ideas as they progress and make changes and adaptations if it helps improve their work • Assess how well their product works in relation to purpose • Explain how they could develop/change their design to make it better
Year 4	• Think about their ideas as they progress and make changes to improve their work • Assess how well their product works in relation to the design criteria and the intended purpose • Explain how they could improve their design and how the improvement would affect the original outcome
Year 5	• Continuously check that their design is effective and fit for purpose • Assess how well their product works in relation to the design criteria and the intended purpose and suggest improvements • Evaluate appearance and function against the original design criteria
Year 6	• Test and evaluate their final product effectively • Analyse and evaluate their final product – including fit for purpose/improvements and what different resources would enhance their product • Assessing their product against their own design criteria

Progression in knowledge— Construction and Use of Materials

FS1	• I can make simple models and say what it is that I have made. (CwM) • I can start to join materials together. (CwM)
FS2	• I can use various tools for artwork and design e.g. playdough tools. (CwM) • I can select my own art and design materials to create with for a purpose. (CwM) • I can safely use tools e.g. scissors. (CwM and FMS) • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.— ELG (CwM) • Use a range of small tools e.g scissors, paint brushes, cutlery (FMS) • ELG - Share their creations explaining the processes they have used
Year 1	• Arrange pieces of construction before building • Make a structure using different materials, and explore how they can be made stronger, stiffer and more stable • Make sensible choices of which materials to use for their own construction • Make their structure stronger, stiffer and more stable (Making a home for the 3 little pigs.—using paper and card, design a prototype using construction items e.g lego. Discuss the strength of the materials within the story, joining sellotape, glue)
Year 2	•
Year 3	• Join materials effectively to build a product • Use a range of techniques to shape and mould materials - including how to strengthen, stiffen and reinforce more complex structures (Design and make a catapult.—using wood and bracing pieces to add strength, exploring different types of glue to join.)
Year 4	• Measure accurately to build effective structures • Use a range of techniques to shape and mould • Experiment with a range of techniques to increase stability of structure • Use finishing techniques, showing an awareness of audience - eg sanding/varnishing/glazing All statements also revisited within year projects.. (Making Shadufs miter wood for corner stability and bracing pieces. Making a robot head— cardboard recap from year 1 and using skills/statements from Electrical and mechanical components grid.
Year 5	
Year 6	• Measure accurately to ensure precision • Demonstrate that their product is strong and fit for purpose • Refine and further improve their product (Create and make a game which includes circuits and mechanical component e.g cams)

Progression in knowledge— Electrical and mechanical components

FS1	
FS2	
Year 1	
Year 2	• Make a product that moves • Cut materials using scissors • Describe materials using specific, technical vocabulary • Explore and use mechanisms eg levers/sliders/wheels and axles • Join materials together as part of a moving product • Explain how different parts move eg levers/sliders/wheels and axles (Making a pop up mechanism for moving picture)
Year 3	• Make a product which uses mechanical components **eg levers,** (Design and make a catapult—using wood and bracing pieces to add strength, exploring different types of joining methods. Explore different types of levers For moving the arm of the catapult before choosing a final design.)
Year 4	• Refine their products after testing them • Incorporate hydraulics and pneumatics • Use a simple circuit and add components to it eg. Series circuits, bulbs, incorporating switches, buzzers and motors • Make a product which uses both electrical and mechanical components e • Use a range of mechanical systems e.g **levers,** linkages, **gears, pulleys, pneumatics and hydraulics** (Design and make a a modern Shaduf which uses gears and pulleys. To design and make a robot head using electrical components, pneumatics and hydraulics.)
Year 5	
Year 6	• Use different kinds of circuits in their products to improve it • Incorporate a switch into their product • Refine their product after testing it • Make a product using mechanical components e.g cams (Create and make a game which includes circuits and mechanical component e.g cams)

Progression in knowledge— Textiles

FS1	
FS2	• I can explore using materials and techniques. (CwM)
Year 1	• Group fabrics and threads by colour and texture • Weave a pattern (recycled plastics to create a seaside pattern) • Identify when patterns are used in textile design • Measure an amount of textile and cut them accurately • Explain choice of textile • Join/bond textiles together to make a product, using techniques such as stitching • Build an image using fabrics • Create a large scale textile/sculpture through class/group collaboration (Punch and Judy puppets— traditional puppets made of two components create a cardboard head and fabric body—joining of the fabric and joining of the two materials glue, stitching, paperclips and sellotape. Explore different types of stitching—running stitch using lacing cards to build on from FS2 skills)
Year 2	
Year 3	• Join textiles of different types in a range of ways • Choose textiles for both their appearance and qualities • Begin to use a range of stitches • Use fabrics to build an image • Add detail and texture to a piece of work (Iron Age Tunics—focus on the different materials that can be used and the stiches that can be used effectively with these materials. Explore different types of stitching running stitch as a recap from year 1, then explore cross stich, back stich and blanket stitch to be used as joining techniques.)
Year 4	
Year 5	• Consider which materials are fit for purpose and join them appropriately • Consider the audience when choosing textiles • Make a prototype first • Use a range of joining techniques • Devise a template or pattern for their product • Explore a range of textures using textiles • Transfer a drawing into a textile design • Experiment with different ways of exploring textiles • Use an artist to influence their textile design • Measure accurately to ensure precision • Refine and further improve a product. (To design and make a WW2 soft toy—focusing on joining materials and using the stitching techniques used by year 1 and 3. Create a prototype of their design before completing their final piece.)
Year 6	

Progression in knowledge— Cooking and Nutrition

FS1	• I can use one handed tools and equipment with support. (FMS) • I can use one handed tools and equipment safely. (FMS) • I am starting to know ways to stay healthy e.g. to make healthy choices about food. (MS)
FS2	• I can use cutlery and other one-handed equipment. (FMS) • I can use a range of small tools e.g. scissors, paint brushes, cutlery. (FMS) • I can manage my own basic hygiene and personal needs e.g toileting and dressing. (MS) • I can explain healthy food. (MS)
Year 1	
Year 2	• Understand where food comes from • Select and use appropriate fruit and vegetables, processes and tools • Use basic food handling, hygienic practices and personal hygiene • Use the basic principles of a healthy and varied diet to prepare dishes (Design and make a healthy snack for Willy Wonkers factory—chn to research snacks you can buy in shops and used food information to discuss how healthy these are. Create a prototype of snack using playdoh and then create final product.)
Year 3	•
Year 4	•
Year 5	• Demonstrate hygienic food preparation and storage • Understand and apply the principles of a varied and healthy diet • Weigh and measure accurately (time/ingredients dry and liquid) • Measure accurately to ensure precision • Apply the rules of basic food hygiene and other safe practices • Understand seasonality and know where and how a variety of ingredients are grown/reared/caught and processed • Refine and further improve a product (Evacuees—cooking and nutrition—traditional carrot cake recipe and why carrots were used instead of sugar. Design cake using fruit instead of sugar using traditionally grown fruit.)
Year 6	• Understand seasonality and know where and how a variety of ingredients are grown/reared/caught and processed (Food Seasonality—discussion linked to seasonal food and Vikings who farmed half the year and were hunters for the second half of the year.)