



Mill Hill Community Primary School
Long Term Plan – Design and Technology Key Skills

Design and Technology

National Curriculum

KS1

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.

Make

- select from and use a range of tools and equipment to perform practical tasks [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.

Cooking and Nutrition

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

KS2

When designing and making, pupils should be taught to:

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [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



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- 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.

Cooking and nutrition

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Design and Technology Key Skill

Aspect	Y1	Y2	Y3	Y4	Y5	Y6
Planning, Knowledge and Evaluation						
Designing	1.1 Draw a simple picture of an intended design with basic labelling.	2.1 Produce detailed, labelled drawings or models of products.	3.1 Share ideas through words, labelled sketches and models, recognising that designs have to meet a range of needs, including being fit for purpose.	4.1 Collect information from a number of different sources and use this information to inform design ideas in words, labelled sketches, diagrams and models, keeping in mind fitness for purpose and the end user.	5.1 Use various sources of information, clarifying/sharing ideas through discussion, labelled sketches, cross-sectional diagrams and modelling, recognising that ideas have to meet a range of needs.	6.1 Develop detailed criteria for designs for products aimed at particular individuals or groups, sharing ideas through cross-sectional end exploded diagrams, prototypes and pattern pieces.
Using ICT to aid design	1.2 Use ICT packages to create a simple plan for a design.	2.2 Use ICT packages to create a labelled design or plan	3.2 Use IT packages to create a labelled design or plan, in detail.	4.2 Use ICT packages to create alternatives for an initial design.	5.2 Use CAD and CAM packages to suggest alternative design ideas and explain their ideas and intentions.	6.2 Use CAD/CAM packages to design moving parts of a design.



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Working from plans	1.3 With help, put ideas into practice	2.3: Think of ideas and plan what to do next, based on their experience of working with materials and components.	3.3 Make realistic plans, identifying processes, equipment and materials.	4.3 Make realistic, step by step plans, reflecting on designs as the product develops.	5.3 Work from own detailed plans, modifying them where appropriate.	6.3 Check work as it develops and modify their approach in the light of progress.
Opinion and influence	1.4 Describe others' work, including work by professional craftspeople and designers and say what they like and dislike about it.	2.4 Describe similarities and differences between own and others' work including work by professional craftspeople and designers.	3.4 Compare and contrast great bridge designs, explaining why a particular design is significant in engineering history.	4.4 Describe the work of a favourite fashion designer and explain why they like his/her designs.	5.4 Research the work done by textile artists and say what they like about a piece, identifying techniques and materials used in creating it and the aesthetic value.	6.4 Research cultural traditions and evidence their influence on their own work.
Existing Product Evaluation	1.5 Describe how an existing product works (e.g. 'the toy moves when I turn the handle').	2.5 Investigate a range of existing products and say if they do what they are supposed to do.	3.5 Investigate the design features (including identifying components or ingredients) of familiar existing products.	4.5 Explain how an existing product is useful to the user.	5.5 Investigate the design features (including identifying components or ingredients) of a familiar existing product in the context of the culture or society in which it was designed or made.	6.5 Explain the form and function of familiar existing products.
Evaluation	1.6 Talk about their own and others' work identifying strengths and weaknesses.	2.6 Explain how closely, finished products, meet their design criteria and say what they could do better in the future.	3.6 Suggest improvements to products made and describe how to implement them (taking the views of others into account).	4.6 Identify what has worked well and what could be improved, evidencing and explaining the results of research.	5.6 Test and evaluate products against a detailed design specification and make adaptations as they develop the product.	6.6 Demonstrate modifications made to a product, as a result of ongoing evaluation, by themselves and others.



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History and culture	1.7 Order products and designs chronologically and begin to explain reasons why they are ordered in that way.	2.7 Describe why a design, building or designer is important.	3.7 Explain the impact of a design or designers on design history and how this has helped to shape the world.	4.7 Explain how fashions and fabrics have changed over time and how this has affected fashion.	5.7 Create a timeline to sequence the development of a design over time and describe how technology has influenced it.	6.7 Describe how an individual in the field of design and technology has helped shape the world.
Making, Using and Understanding						
Tools	1.8 Select and explain why they have chosen a particular tool for a task.	2.8: Use tools safely for cutting and joining materials and components.	3.8 Select the appropriate tools and explain choices.	4.8 Analyse the potential of a range of tools for a task and use them with precision.	5.8 Name and select appropriate tool for a task and use them with precision.	6.8 Use more complex tools with increasing accuracy.
Materials	1.9 Select and explain their choice of materials, sometimes with help.	2.9: Choose appropriate materials and suggest ways of manipulating them to achieve a desired effect.	3.9 Plan which materials will be needed for a task and explain why.	4.9 Choose from a range of materials, showing an understanding of their different characteristics.	5.9 Select and combine materials with precision.	6.9 Choose the best materials for a task, showing an understanding of their working characteristics.
Health and Safety	1.10 Explain how to keep safe during a practical task.	2.10: Work safely and hygienically in construction and cooking activities.	3.10 Follow health and safety rules for cooking and baking activities.	4.10 Follow health and safety rules when working with materials and substances.	5.10 Select and name appropriate tools for specific jobs and demonstrate how to use them safely.	6.10 Demonstrate how their products take into account the safety of the user.
Repair and maintenance	1.11 Explain how they would fix simple products.	2.11 Cut, measure, form and shape materials to fix or	3.11 Try an alternative way of fixing something, if their	4.11 Describe how a product could be	5.11 Recycle, repair and mend old clothes/tools and	6.11 Paint, glue, nail and sand to



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Textiles	1.12 Cut out shapes from a range of fabrics and papers.	repair something, explaining objectives. 2.12: Join fabrics using running stitch, glue, staples, over sewing and tape.	first attempt isn't successful. 3.12 Create a simple pattern for a design.	made better, stronger or more sustainable. 4.12 Use a simple pattern to create a life-sized item of clothing.	explain why this is a good idea. 5.12 Create a 3D product using a range of materials and sewing techniques.	rejuvenate a damaged, faulty or old object. 6.12 Combine fabrics to create more useful properties and make a product of high quality, checking for snags and glitches.
Card making	1.13 Fold, tear and cut paper and card.	2.13: Create simple hinges and pop-ups using card.	3.13 Cut slots in card and create nets.	4.13 Use more complex pop-ups.	5.13 Combine materials with temporary or fixed joints.	6.13 Combine materials with moving joints.
Cutting	1.14 Cut accurately and safely with scissors	2.14: Cut wood/dowel using a bench hook and hacksaw.	3.14 Measure and mark wood/dowel.	4.14 Cut internal shapes	5.14 Cut safely and accurately to a marked line.	6.14 Use a craft knife, cutting mat and safety ruler with 1:1 supervision if needed.
Joining	1.15 Join appropriately, using glue or tape.	2.15: Attach features to a vehicle (e.g. an axle and wheels or a sail and rudder). Join appropriately, with glue and/or tape, for different materials and situations.	3.15 Join fabrics using a running stitch.	4.15 Use a glue gun with close supervision (one to one)	5.15 Use a glue gun with close supervision.	6.15 Join materials, using the most appropriate method for the materials or purpose.
Structures	1.16 Build simple structures.	2.16 Improve structures by making them stronger, stiffer and more stable.	3.16 Create a shell or frame structure using diagonal struts to strengthen.	4.16 Prototype and build frame and shell structures, showing awareness of how to	5.16 Build a framework using a range of materials (e.g. wood, card and	6.16 Select the most appropriate materials and frameworks for different structures,



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Mechanisms	1.17 Use wheels, axels, levers and sliders.	2.17: Create and use wheels and axles, levers and sliders.	3.17 Create and use simple gears, pulleys, cams, levers and linkages.	4.17 Use pulleys, levers and linkages in their products.	5.17 Use cams or gears in their products	6.17 Select the most appropriate mechanical system for a particular purpose.
Electricity	1.18 Identify and talk about products that use electricity to make them work.	2.18: Create working circuits to light a bulb or work a buzzer.	3.18 Build models, incorporating circuits, with buzzers and bulbs.	4.18 Build models incorporating motors.	5.18 Build models, incorporating switches to turn on and off.	6.18 Design products incorporating the most appropriate electrical systems.
ICT	1.19 Input random control instructions to simple devices for an unplanned outcome (e.g. making Roamer move).	2.19: Input a sequence of instructions to a device for a planned outcome (e.g. making Roamer move).	3.19 Evaluate their own programme, refine and improve it.	4.19 Create a solution to a problem using a control output device that has a sequence of events to activate it.	5.19 Monitor and control more than one output, in response to changes.	6.19 Develop, try out and refine sequences of instructions to effectively monitor, measure and control events.
Preparing and cooking food	1.20 Measure and weigh food items using non-standard measures (e.g. spoons and cups)	2.20: Cut, peel, grate and chop a range of ingredients to make dishes from other countries.	3.20 Combine a variety of ingredients using a range of cooking techniques.	4.20 Measure and weigh ingredients appropriately to prepare and cook a range of savoury dishes.	5.20 Combine food ingredients approximately (e.g. kneading, rubbing in and mixing)	6.20 Use appropriate tools and equipment, weighing and measuring with scales.
Nutrition	1.21 Identify the main food groups, including fruit and vegetables.	2.21: Recognise the need for a variety of foods in a diet.	3.21 Describe what a balanced diet is.	4.21 Make healthy eating choices and explain why.	5.21 Evaluate meals and consider if they contribute towards a balanced diet.	6.21 Plan how they can have a healthy/affordable diet.



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Origins of food	1.22 Identify the source for common foods.	2.22: Explain where the food they eat comes from (e.g. by referring to countries, counties, animals and plants).	3.22 Identify food which comes from the UK and other countries in the world.	4.22 Explain some of the processes that foods go through to preserve/make them more appealing.	5.22 Explain what times of year particular foods are in season.	6.22 Explain how ingredients were grown, reared, caught and processed.
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