



Scheme of Work for Design & Technology

Design and technology prepares pupils to participate in tomorrow's rapidly changing technologies. They learn to think and intervene creatively to improve quality of life. The subject calls for pupils to become autonomous and creative problem solvers, as individuals and members of a team. They must look for needs, wants and opportunities and respond to them by developing a range of ideas and making products and systems. They combine practical skills with an understanding of aesthetics, social and environmental issues, function and industrial practices. As they do so, they reflect on and evaluate present and past design and technology, its uses and effects. Through design and technology, all pupils can become discriminating and informed users of products, and become innovators

INTRODUCTION

Creativity is fundamental to successful learning. Being creative enables children to make connections between one area of learning and another. They are initially given opportunities to think about what they see, touch and feel; to express their ideas, thoughts and feelings through the use of a widening range of materials and suitable tools for designing and making. As they progress, this scheme of work sets out the necessary knowledge, skills and understanding to:

- use a range of materials to design and make simple products
- select materials, tools and techniques and explain their choices
- understand simple mechanisms and structures
- measure, assemble, join and combine materials in a variety of ways using basic tools safely
- investigate and evaluate simple products, commenting on the main features
- develop awareness of a range of materials, components and techniques to design and make quality products
- evaluate work as it develops and, if necessary, suggest alternative
- produce designs and plans which list the stages involved in making a product, and list tools and materials used
- accurately measure, mark, cut, join and combine a variety of materials, working safely and recognising hazards to themselves and others.
- understand the use of electrical and mechanical systems and more complex structures
- evaluate what is or is not working well in a product.
- to put on aprons independently
- to use a range of tools i.e. scissors, glue spreaders appropriately and effectively
- to continue to have experience at using hole punchers, staplers and other fastenings
- to be able to use a range of construction kits confidently and follow simple instructions
- to be able to roll/cut/mould/fold pliable materials confidently
- to be able to slice/cut/grate/pour when cooking confidently and safely
- to be able to draw around an object/template confidently and accurately
- to be able to score and cut and fold accurately
- to be able to use standard units to measure accurately
- to be able to use glue appropriately
- to be able to use a suitable medium to join materials together correctly.

EY: THE EARLY YEARS (NURSERY AND RECEPTION)

<p><i>throughout the EY, pupils will be taught:</i></p> <ul style="list-style-type: none">➤ to ask questions about how things work➤ to learn about what they are doing and what they have discovered➤ about a variety of customs and cultures➤ to respond to drawings and pictures and drawing their own➤ to investigate and use a variety of construction kits, materials, tools and products➤ to use a range of materials to express ideas➤ to explore colour, shape, texture and form➤ to select their own resources➤ to develop making skills e.g. cutting, folding, mixing, joining and building for a variety of purposes➤ to handle appropriate tools and construction materials safely and with increasing control	<p>KEY LANGUAGE</p> <p>Plan Test Choose Sharp Hard Soft More Less Smell Taste Construct Fix Stick Glue Cut Tools Materials Names of tools and materials used</p>
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Early Years

Design and Technology is mainly covered through the area of Expressive Arts and Design & Physical Development using equipment + in the curriculum guidance for the Foundation Stage.

Expressive arts and design

The Early Learning Goals

- Use various construction materials
- Select tools and techniques required to shape, assemble and join materials
- Realise tools are used for a purpose
- Construct with a purpose in mind using a variety of resources
- Use one handed tools and equipment e.g. make strips in paper with child scissors
- Handle equipment and tools effectively

Physical Development:- using equipment & materials

The Early Learning Goals

- Use a range of small & large equipment
- Handle tools, objects, construction & malleable materials safely & with increasing control

By the end of the EY most children will be able to:

Build and construct with a wide range of objects, selecting appropriate resources and adapting their work where necessary

Select the tools and techniques they need to shape, assemble and join materials they are using

Safely use and explore a variety of materials, tools and techniques experimenting with colour, design, texture form and function.

More able pupils might be able to: Generate ideas and recognise characteristics of familiar products. Their plans show that, with help, they can put their ideas into practice. They use pictures and words to describe what they want to do. They explain what they are making and which tools they are using. They use tools and materials with help, where needed. They talk about their own and other people's work in simple terms and describe how a product works.

During KS1 pupils learn how to think imaginatively and talk about what they like and dislike when designing and making. They build on the Early Learning Goals experience of investigating objects around them. They explore how familiar things work and talk about, draw and model their ideas. They learn how to design and make safely and could start to use ICT as part of their designing and making.

<p><i>Knowledge, skills and understanding</i></p> <p><u>Developing, planning and communicating ideas:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> generate ideas from a variety of sources develop ideas from experience with materials and components talk about ideas plan the development of their ideas to communicate their ideas through model building and drawings, mock-ups and where appropriate ICT <p><u>Working with tools, equipment, materials and components to make quality products:</u> <i>pupils will be taught</i></p> <ol style="list-style-type: none"> select appropriate tools, materials, ingredients and techniques use simple finishing techniques for quality how to measure, mark out, cut and shape a range of materials following health and safety guides assemble, join and combine materials and components and explore sensory qualities use simple finishing techniques to improve the appearance of their product using a range of equipment follow safe procedures for food safety and hygiene <p><u>Evaluating processes and products:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> to talk about their preferences related to ideas to identify what they could improve upon against a criteria <p><u>Knowledge and understanding of materials and components:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> about the characteristics of materials and building structures ways in which mechanisms can be used <p><u>Cooking and Nutrition:</u> <i>Pupils should be taught</i></p> <ol style="list-style-type: none"> use the basic principles of a healthy and varied diet to prepare dishes understand where food comes from 	<p>KEY LANGUAGE</p> <p>Ideas discuss choose drawing labelling hole punch join cut planning fastener moving handle lever pivot pull push slider direction blade metal balance movement forward backwards sequence</p> <p>Drawing plan model construction kits join fix framework movement structure surface thinner thicker corner straight curved symmetrical 3D shapes</p> <p>Investigating tasting choosing popular pictogram sort washing cleaning cutting slicing grating salad fruit vegetables peel flesh skin grater chopping peeler seeds pips stalk juice root leaf stone bunch</p> <p>Choose discuss drawing label list join fix plan scissors hole punch masking tape structure strong weak transparent 3D shapes</p> <p>Purpose ideas discuss explore predict survey table diagram distance joining testing vehicle wheels chassis axles logo</p> <p>Mock-up evaluate template fabric needle running stitch sewing cutting out gluing puppet seam thread quality strengthen</p> <p>Decide brainstorm fast slow quicker connecting doweling winding mechanism fixing handle cotton reel</p> <p>Adapt design experiment predict evaluate pin pattern tape measure centre seam expensive template</p>
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Pupils are taught the knowledge, skills and understanding through thematic topics. Design technology elements are clearly identified within these topics:

- End of topic expectations (understanding)
- Outcomes – design technology skills that pupils will acquire
- Objectives – design technology knowledge that pupils will learn

YEAR 1

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none">- talk about their ideas- generate ideas by drawing on their own explorations and investigations- use pictures and words to describe what they want to do- explain what they are making and which tools they are using- create a plan and put their ideas into practice- use tools and materials with help where needed- select tools and materials for making their product from a selection provided by the teacher- join and combine materials- use simple finishing techniques with support to finish their design- evaluate their design through talk- select appropriate tools and techniques for their intended purpose- represent observations and ideas within their work- select materials based on their visual and tactile elements- model their ideas by making a paper mock-up- identify simple design criteria- consider what they might change in their current work or develop in their work- explore colour, texture, shape, form and space in two or three dimensions- work creatively on a large or small scale- experiment to create different textures (Foundation)- ask a range of questions as starting points and to help develop ideas- use a range of tools and techniques to record from first hand experience- use sensory vocabulary to describe texture, taste and appearance- follow safe procedures for food safety and hygiene- use simple tools and techniques to prepare fruit and vegetables- design a product containing fruit or vegetables based on their tasting experience- talk about their finished product, and record through pictures and words how it looks and tastes and how well it matches their original ideas- draw on their investigation of vehicles to inform their own design ideas- make simple drawings, with some labels of parts	<ul style="list-style-type: none">- that there are different types of greeting cards and that they are made up of different parts- that ideas for their own design can be developed by looking at a selection of greetings cards- simple vocabulary associated with the use of textiles- basic sewing techniques- how to use a template to mark out identical pieces of fabric- about different joining techniques- how to evaluate against design criteria- how to review what they and others have done and say what they think and feel about it- that materials have different qualities- that different media can be combined- how to use ideas involving fitting, overlapping, in, out, enclosure, grids and sun-like shapes- appropriate vocabulary to describe shapes, textures and colours- how to make simple observations- starting points for their work and how to develop their ideas- how to use a range of materials tools and techniques, - that there is a wide variety of fruit and vegetables available which can be individually named- that fruit and vegetables may require treatment before being eaten and know what the treatment is <i>e.g. washing, peeling</i>- a sensory vocabulary- how to use their senses to try different fruits and vegetables- basic food handling, hygienic practices and personal hygiene including how to control risk by following simple instructions- how to communicate what they intend to make using a range of means- how to develop their design ideas applying findings from their earlier research- how to select and use appropriate fruit and vegetables, processes and tools- evaluate their product by asking questions about what they have made and how they have gone about it- that there are many types of vehicles- that vehicles have different purposes- that vehicles are made up of different parts

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - communicate their ideas using a range of methods, including drawings, making models, talk and discussion - make simple plans by suggesting what to do next as their ideas develop - develop their design ideas through discussion, observation and drawing - measure, mark out, cut and shape a range of materials accurately - assemble, join and combine materials and components - use a range of finishing techniques - evaluate their finished vehicle, recording how it works and matches the original ideas 	<ul style="list-style-type: none"> - that ideas for their own designs can be obtained by looking at familiar products - how to use wheels and axles, understanding that wheels and axles can be assembled in two different ways: <ul style="list-style-type: none"> - either the wheel is attached tightly to the axle and the axle is free to rotate, or - the axle is fixed with the wheel free to rotate around it - how to apply rules which will control risk when using materials, tools and equipment - how to use hand tools safely and appropriately - how to identify a purpose for what they intend to design and make

YEAR 2

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - develop ideas by putting together components - generate ideas based on their own experiences and plan what to do next as ideas develop - select appropriate tools, techniques and materials, explaining their choices - collect and sort information - communicate their ideas in a range of ways including verbal, written and pictorial methods - develop own ideas from stimulus such as pictures and artefacts - develop printing and dying techniques skills and observe effects - assemble, join and combine materials (fabric) and processes (print/dye) to make a patchwork square - improve the appearance of work by using simple techniques such as embellishing or hiding stitching - make judgements about their product, identifying what they could have done differently and how they could improve their work in the future - follow hygiene rules for fruit and vegetable preparation - record findings from investigations in simple tables and block graphs - apply what they have learnt from investigations in their design - create a design for a selected target group 	<ul style="list-style-type: none"> - how to relate the way things work to their intended purpose - how materials and components have been used, people's needs, and what other users say about them - how to make their structures more stable - how to recognise shapes and their application in simple structures - how to evaluate their products as they are developed, identifying strengths and possible changes they might make - about processes which can be used to change textiles, tie dye, printing and appliqué - the effect of a range of printing and dying techniques on fabrics - how to improve the appearance of work by using simple embellishments and finishing techniques - how to evaluate work constructively, saying what they like and dislike about it - to suggest ways in which work could be improved - that there is a wide variety of fruit and vegetables available which can be grouped and individually named - that fruit and vegetables may require treatment before being eaten and know what the treatment is - that fruit and vegetables can be classified according to their sensory and other properties

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - select and use appropriate equipment and ingredients to achieve the shapes and sensory properties required for their product - talk about their finished product, and record through pictures and words how it looks and tastes and how well it matches their original ideas and chosen target group 	<ul style="list-style-type: none"> - that fruit and vegetables have nutritional value and are an important part of our diet - that food processing can affect appearance, texture, odour and taste - various ways to record the results of their experiments - how to identify a target group for what they intend to design and make - how to refine their design ideas applying findings from earlier research

By the end of Key Stage 1, most children will be able to:

Generate ideas and plan what to do next, based on their experience of working with materials and components. They use models, pictures and words to describe their designs. They select appropriate tools, techniques and materials, explaining their choices. They use tools and assemble, join and combine materials and components in a variety of ways. They recognise what they have done well as their work progresses, and suggest things they could do better in the future.

During Key Stage 2 pupils work on their own and as part of a team on a wide range of designing and making activities. They think about the products used for the people who use them. They plan what has to be done and identify what works well and what could be improved in their own and other people's designs. They draw on knowledge and understanding from other areas of the curriculum and use computers in a range of ways.

<p><i>Knowledge, skills and understanding</i></p> <p><u>Developing, planning and communicating ideas:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> generate ideas for products discussion, annotated sketches, diagrams and prototypes after thinking about who will use them and what they will be used for, using information from a number of sources, including ICT based sources develop ideas and explain them clearly, putting together a list of what they want their design to achieve plan what they have to do, suggesting a sequence of actions and alternatives, if needed communicate design ideas in different ways as these develop, bearing in mind aesthetic qualities, and the uses and purposes for which the product is intended <p><u>Working with tools, equipment, materials and components to make quality products:</u> <i>pupils will be taught</i></p> <ol style="list-style-type: none"> select appropriate tools and techniques for making their product including construction materials, textiles and ingredients suggest alternative ways of making their product, if first attempts fail explore the sensory qualities of materials and how to use materials and processes measure, mark out, cut and shape a range of materials, and assemble, join and combine components and materials accurately use finishing techniques to strengthen and improve the appearance of their product, using a range of equipment including ICT follow safe procedures for food safety and hygiene <p><u>Evaluating processes and products:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> reflect on the progress of their work as they design and make, identifying ways they could improve their existing products carry out appropriate tests before making any improvements recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose/criteria understand how key events and individuals in D&T have helped shape the world <p><u>Knowledge and understanding of materials and components:</u> <i>Pupils will be taught</i></p> <ol style="list-style-type: none"> how the working characteristics of materials affect the ways they are used how materials can be combined and mixed to create more useful properties how mechanisms can be used to make things move in different ways, using a range of equipment including and ICT control program how electrical circuits, including those with simple switches, can be used to achieve results that work 	<p>KEY LANGUAGE</p> <p>YEAR 3/4</p> <p>* PACKAGING Font graphic decision scoring criteria adhesives join assemble accuracy 3D shapes</p> <p>* PIZZA TOPPING Texture taste appearance healthy preference data diagram cut mix spread slice blend grate chop chopping board pizza topping sweet sour bitter salty</p> <p>* PHOTO FRAMES Decoration quality component parts purpose layering cutting finish stable free standing reinforce sturdy structure</p> <p>* VIKING FOOD Texture taste appearance health criteria cost frequency ingredients evaluate cut mix spread slice boil fry bake</p> <p>EGYPTIAN WALL HANGINGS User, purpose design criteria model evaluate labelled pattern template fabric seam seam allowance reinforce dye embroidery stretch fray</p> <p>YEAR 5/6</p> <p>* BISCUITS Investigate research evaluate consumer combining creaming sandwiched texture quality control elastic</p> <p>* MUSICAL INSTRUMENTS Survey intention movable material mould wood glue shaping sound note pitch tempo timbre instruction</p> <p>* VICTORIAN TEXTILES Specification make-up measure embroidery sampler pattern symmetry cross stitch running stitch</p> <p>* BREAD evaluate preferences kneading shaping glazing yeast wheat grain</p> <p>* CONTROLLABLE VEHICLES Construction kits cutting jig pressure switch motor mounting clip modify assembling series and parallel circuits electrical components</p>
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Cooking and Nutrition: *Pupils should be taught*

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

KS2: YEARS 3 AND 4

Pupils will build on knowledge, skills and understanding from KS1 and, in addition, be taught increased control of materials, tools and techniques and instructed in design technology processes. They will begin to investigate and evaluate a range of familiar products – thinking about how they work and how they are used.

Pupils are taught the knowledge, skills and understanding through thematic topics. Design technology elements are clearly identified within these topics:

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YEAR 3

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - record their opinions on a table commenting on taste appearance, smell and texture, - Identify different groups in the balanced plate. - place food in correct food groups. - compare ideas, methods and approaches in their own and others' work - use sharp tools correctly. - identify aspects of personal hygiene. - work through a sequence of tasks to create a 'dish.' - taste different foods and evaluate. - work as a team - evaluate work and change to make improvement - work safely with a range of simple hand tools - explore ideas through 3D modelling - develop increasing control of different skills and technique - follow a design/model - collect various information to help develop own ideas - handle sharp tools safely - understand the effect of various amounts of pressure on malleable material - record from experience and imagination examples of fashion - make thoughtful observations of examples - investigate and combine visual and tactile qualities to suit given purpose - design and make an item to given criteria - use different levels of concentration to produce fine motor skill work - explore a range of starting points for practical work - apply their experience of materials - collect other information to help develop ideas - use a variety of methods to communicate observations - compare ideas, methods and approaches in own work - match ideas to materials and processes - explore a range of starting points for practical work - investigate the features of portraits - develop control of tools and techniques for portrait 	<ul style="list-style-type: none"> - that different foods originate from different places - different groups in a balanced plate - how to create simple French foods - how to assemble simple pneumatic systems - ways of using pneumatic systems in conjunction with simple levers to control movement - that air pressure can be used to produce and control movement - that different recipes are associated with different places - different materials/ingredients that can be used to create models/recipes of different shapes and form - that sources of food can impact on diet - about different styles of Indian fashion - that different materials are suitable for different clothes - about the roles of artists and craftspeople in different cultures - Vikings wore different clothes/armour for different purposes - that various materials can be used to construct representations of Viking implements

YEAR 4

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none">-control tools and techniques to produce a final piece- investigate how to fix and join materials that suits the intention-build up a portfolio of visual and other information- question and make thoughtful observations- use a variety of methods and approaches to communicate observations, ideas and feelings and to design and make images and artefacts- select and use safely kitchen utensils- combine components according to taste, appearance and texture to create a certain product- use kitchen utensils appropriately- investigate and combine visual and tactile qualities of materials and processes and to match these qualities to the purpose of the work- compare ideas, methods and approaches in their own and other's work and say what they think and feel about them- use a range of processes, including ICT- explore a range of starting points for practical work- record from experience and imagination, select and record from first hand observations and explore ideas for different purposes- question and make thoughtful observations about starting points and select ideas to use in their work- collect visual and other information to help them develop their ideas- use a variety of methods and approaches to communicate observations, ideas and feelings, and design and make images based on different methods and techniques- design and make artefacts for different purposes,- compare their work with peers and evaluate- adapt their work according to personal and peer views and plan to develop it further	<ul style="list-style-type: none">- about rationing to create recipes for meals that would have been eaten during WW2- basic food preparation techniques to follow a war time recipe- the difference between food today and food during WW2 times- basic food preparation techniques and ways of combining components to create simple food products for a particular purpose- that the quality of the product depends on how well it is made and presented- that different methods can be used in order to represent different environments and climates- of different materials and textures to create a painting/collage representing different environments/climates- how to imitate the work of famous artists, using different techniques, focusing on textures, colours and shapes- to plan, carry out and evaluate a product thinking about any modifications that could be made- how to create a Roman clock or mosaic pattern based on research- different patterns and textures associated with Roman mosaics- the representation of Roman numerals

UPPER KS2: YEARS 5 AND 6

Pupils will build on previous knowledge, skills and understanding and continue to be taught greater control of materials, tools and techniques through more complex activities. Planning and design will be in greater depth (e.g. to scale) and evaluations more detailed, considering consumer views on various products.

Pupils are taught the knowledge, skills and understanding through thematic topics. Design technology elements are clearly identified within these topics:

- End of topic expectations (understanding)
- Outcomes – design technology skills that pupils will acquire
- Objectives – design technology knowledge that pupils will learn

YEAR 5

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - research current products in market - develop skills in evaluating food characteristics - design a product with an end audience/market in mind - draw conclusions from research - follow instructions and handle food safely - adapt a basic recipe - create a design - use a variety of methods and approaches to communicate observations - compare ideas, methods and approaches in their own and others' work at key points in a process and modify as necessary - make decisions about how to work individually or in a group and complete a piece of work - make experimental pieces to show the effects of different ideas and techniques - talk about their finished work and how and why it was made - identify the differences between their work and the work of others - make changes in their work where needed - describe accurately how toy vehicles work using appropriate vocabulary - identify components parts and their functions - make clear and accurate drawings of toy vehicles - use construction kits to make working models and investigate movement - use tools safely and accurately to construct a simple frame - use drawing as a way of modelling ideas - select appropriate tools, materials, components and techniques for a specified task - evaluate their vehicle according to the design criteria and suggest improvements - use a variety of methods and approaches to design artefacts - design and make artefacts for specific purposes - evaluate and assess their own and others' work - investigate and experiment with different animation techniques matching qualities to the purpose of the work - refine a technique appropriate to the purpose - describe how they might develop their work further 	<ul style="list-style-type: none"> - about physical and chemical changes in food - the processes involved making a product - that biscuits come in many forms - how to time manage and create a biscuit for a specific audience - how to evaluate food products against given criteria - that stimulus can inspire work - that the visual and tactile qualities of materials produce different affects to fit the purpose of the work - that Tudor events can be represented in textiles - how to make/evaluate their own moveable vehicle - how a car moves in a linear direction - how to research making a moveable vehicle, that can move without being pushed - how to control the speed and direction of a motor - how to assemble circuits incorporating motors and switches - the key cultural themes of the Mardi Gras - how to create design and assess a carnival hat/mask or other product - how to adapt and improve work to achieve design specifications - how to evaluate techniques in the use of creating and joining materials for the best result - how animation is planned - how to design and create an animation - how to evaluate and improve technique and product

YEAR 6

Skills: Children can	Knowledge: Children know
<ul style="list-style-type: none"> - assemble, join and combine materials and components - adapt their work according to their views and describe how they might develop it further - measure, weigh, combine and time the cooking of a range of ingredients with accuracy - follow safe procedures for food safety and hygiene - recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose - record from experience and imagination, select and record from first hand observation and explore ideas for different purposes - apply their experience of materials and processes, developing their control of tools and techniques - communicate design ideas in different ways as these develop, bearing in mind aesthetic qualities, and the uses and purposes for which the product is intended - suggest alternative ways of making their product, if the first attempt fails - use finishing techniques to strengthen and improve the appearance of their product, using a range of equipment - develop ideas and explain them clearly, putting together a list of what they want their design to achieve - adapt their work according to their own and others' views and describe how they might develop it further - examine models to utilise construction ideas in own creations 	<ul style="list-style-type: none"> - visual and tactile elements and how these elements can be combined and organised for different purposes - about materials used in art and design and how these can be matched to intentions - the purposes of craftspeople, designers and architects working in different times and cultures - processes involved in making a product - about the working characteristics of materials - why we follow safe procedures for food safety and hygiene - that different foods are synonymous with different places - the roles and purposes of artists, craftspeople and designers working in different periods, modern times and cultures - different styles of design from different forms - which materials are most suited to make strong structures, - how materials can be adapted to create strong structures - which materials are best suited for different purposes - how the working characteristics of materials affect the ways they are used - recognise that the quality of a product depends on how well it is made and how well it meets its intended purpose - how electrical circuits, including those with simple switches, can be used to achieve results that work - how systems, such as siphons, aqueducts etc are used for water transportation - materials used in art and design and how these can be matched to intentions - processes involved in making a product - how to design, create, and adapt models for suitable purposes

By the end of Upper KS2 (Y6) most children will be able to

Generate ideas by collecting and using information. They take users' views into account and produce step-by-step plans. They communicate alternative ideas using words, labelled sketches and models, showing that they are aware of constraints. They work with a variety of materials and components with some accuracy, paying attention to quality of finish and to function. They select and work with a range of tools and equipment. They reflect on their designs as they develop, bearing in mind the way the product will be used. They identify what is working well and what could be improved.

More able pupils might be able to

Draw on and use various sources of information. They clarify their ideas through discussion, drawing and modelling. They use their understanding of the characteristics of familiar products when developing and communicating their own ideas. They work from their own detailed plans, modifying them where appropriate. They work with a range of tools, materials, equipment, components and processes with some precision. They check their work as it develops and modify their approach in the light of progress. They test and evaluate their products, showing that they understand the situations in which their designs will have to function and are aware of resources as a constraint. They evaluate their products and their use of information sources.

Pupils identified as gifted and talented may be able to:

Draw on and use a range of sources of information, and show that they understand the form and function of familiar products. They make models and drawings to explore and test their design thinking, discussing their ideas with users. They produce plans that outline alternative methods of progressing and develop detailed criteria for their designs and use these to explore design proposals. They work with a range of tools, materials, equipment, components and processes and show that they understand their characteristics. They check their work as it develops and modify their approach in the light of progress. They evaluate how effectively they have used information sources, using the results of their research to inform their judgements when designing and making. They evaluate their products as they are being used, and identify ways of improving them.

Promoting pupils' spiritual, moral, social and cultural development through design and technology.

Design and technology provides opportunities to promote:

- *spiritual development*, through helping pupils recognise their own creativity and the creativity of others in finding solutions to problems, and through recognising the tension between material and non-material needs
- *moral development*, through helping pupils to reflect on how technology affects the environment so they can make informed choices when designing and making and through discussing disadvantages of new technology to the local community
- *social development*, through helping pupils recognise the need to consider the views of others when discussing design ideas
- *cultural development*, through exploring the contribution of products to the quality of life within different cultures, and through valuing and reflecting on the responses of people from other cultures to design solutions.

Promoting key skills through design and technology

Design and technology provides opportunities for pupils to develop the key skills of:

- *communication*, through exchanging designing and making ideas with adults and peers, producing design proposals, and recording and evaluating their work
- *application of number*, through measuring and assembling materials and components, evaluating processes and products by collecting and recording data, and presenting findings
- *ICT*, through preparing, presenting and reviewing information as they work on their design ideas and developing models that communicate these ideas.
- *working with others*, through drawing on other people's experiences to generate ideas, discussing their own and other people's designs, both in group projects and when seeking support for individual work, and through researching the needs and values of intended users of their products.
- *improving own learning and performance*, through carrying out focused practical tasks that support their own approaches, following plans to meet negotiated targets, and through evaluating the whole designing and making process
- *problem solving*, through dealing with conflicting requirements when making and project planning, and through considering alternatives in designing when investigating and evaluating products.

Promoting other aspects of the curriculum

Design and technology provides opportunities to promote:

- *thinking skills*, through pupils identifying relevant sources of information, and developing criteria for designs to guide their thinking
- *financial capability*, through taking account of the relative cost of materials and components
- *enterprise skills*, through identifying an opportunity to design something to meet a specific need, finding out about the work of professional designers and the manufacturing industry and then making the product, and evaluating the whole process
- *work-related learning*, through visiting a workplace for hands-on experience related to designing and making, and providing the opportunity for visitors from industry

Use of information and communication technology across the curriculum

1. Pupils will be given opportunities to apply and develop their ICT capability through the use of ICT tools to support their learning in cross curricular work in the ICT suite at each site
2. Pupils will be given opportunities to support their work by being taught to:
 - a. find things out from a variety of sources, selecting and sorting the information to meet their needs and developing an ability to question its accuracy
 - b. develop their ideas using ICT tools to amend and refine their work and enhance its quality and accuracy
 - c. exchange and share information, both directly and through electronic media
 - d. review, modify and evaluate their work, reflecting critically on its quality, as it progresses

Health and safety

1. This statement applied particularly to design and technology.
2. When working with tools, equipment and materials, in practical activities and in different environments, including those that are unfamiliar, pupils should be taught:
 - a. about hazards, risks and risk control
 - b. to recognise hazards, assess consequent risks and take steps to control the risks to themselves and others
 - c. to use information to assess the immediate and cumulative risks
 - d. to manage their environment to ensure the health and safety of themselves and others
 - e. to explain the steps they take to control risks

Reviewed and amended January 2016
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