Design Technology Our Lady of the Primary School

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

EYFS and Key Stage 1

	EYFS	Year 1	Year 2
Designing	• Think of what they want to make with a given set of resources • Begin to be aware that the resources they have will limit what they can make • Talk to an adult about what they want to make • Make decisions about how to approach a task before starting • Start to choose the resources they need to make a product	• Begin to research existing products before designing their own • When researching, find out how products work and which materials have been used. • Use own ideas to design something • Describe how their own idea works • Design a product which moves • Explain to someone else how they want to make their product • Make a simple plan before making • Begin to develop their own ideas through drawings, and where appropriate, make templates or mock ups of their initial ideas using ICT (if needed).	• Begin to develop their design ideas using research and discussion with peers and adults. • Understand the purpose of their product • Have an identified target group in mind when designing and making a simple product. • Think of an idea and plan what to do next • Explain why they have chosen specific textiles or materials • Draw a simple design and label the parts of their product • develop their own ideas through drawings, and where appropriate, make templates or mock ups of their initial ideas using ICT (if needed).

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

EYFS and Key Stage 1

	EYFS	Year 1	Year 2
Making	• Handle equipment safely • Explore a variety of materials, tools and techniques, for example know how lego joins together • Begin to appreciate that glue does not work on all materials • Show increasing levels of independence in the making stage	• Use own ideas to make something • Assemble and join materials using a variety of methods • Begin to build structures, exploring how they can be made stronger, stiffer and more stable. • Explore the use of different mechanisms (for example sliders, wheels and axles) in their products. • With help, measure, mark out and cut a range of materials. • Use tools safely (e.g. scissors and a hole punch). • Begin to assemble, join and combine materials and components together using a variety of temporary methods (e.g. glue or sellotape). • Begin to use simple finishing techniques to improve the appearance of their products.	• Choose tools and materials and explain why they have chosen them • Join materials and components in different ways, including glue, sellotape and masking tape. • Can identify and name a simple selection of hand tools (e.g. scissors). • Carry out finishing techniques that have been modelled by the teacher • Use simple sewing techniques including cutting, shaping and joining fabric to make a simple product. • build structures, exploring how they can be made stronger, stiffer and more stable. • With help, measure, cut and score with some accuracy. • Start to assemble, join and combine materials in order to make a product. • Start to choose and use appropriate finishing techniques based on their own ideas.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

EYFS and Key Stage 1

	EYFS	Year 1	Year 2
Evaluating	• Be prepared to stop to check how well their product is developing • Changing strategy as needed when they know their product is not turning out the way they wanted • Be able to explain to others how they made their product and be able to offer a simple explanation as to how they would improve on it	• Describe how something works • Explain what works well and not so well in the model they have made • Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.	• Evaluate their work against their design criteria. • Look at a range of existing products and what they like and dislike about products and why. • Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. • With confidence talk about their ideas, saying what they like and dislike about their product.
Technical Knowledge	• Think of a range of ways of joining two resources together • Begin to use a wider range of tools carefully and skilfully • Begin to understand which materials are suitable for certain tasks.	• Make their own model stronger • Make a product that has at least one moving part e.g. wind/ simple motor powered boat	• Make a model stronger and more stable • Use wheels and axles, when appropriate to do so • Know how simple mechanisms work e.g. sliders and linkages • Make a product that has at least two moving parts.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

EYFS and Key Stage 1

	EYFS	Year 1	Year 2
Food Technology	• Know why it is important to wash their hands before handling food • Begin to understand which foods go together and which do not • Begin to name certain foods such as sandwich, samosas etc.	• Cut food safely • Know that all food comes from either plants or animals. • Use basic food handling, hygiene practices and personal hygiene • Know how to prepare simple dishes safely and hygienically without using a heat source. • Know how to use techniques such as cutting, peeling and grating.	• Know that everyone should eat at least five portions of fruit and vegetables each day. • Demonstrate how to prepare simple dishes safely and hygienically without using a heat source. • Demonstrate how to use techniques such as cutting, peeling and grating. • Weigh ingredients to use in a recipe • Describe the ingredients used when making a dish or cake • Can talk about which food is healthy and which is not • Follow safe procedures for food safety and hygiene.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Lower Key Stage 2

	Year 3	Year 4
Designing	• Research independently and generate some ideas before thinking about resources. • Consider the purpose and audience for their product • Order the main stages of making a product, continually referring to purpose and establish criteria for a successful product. • Prove that a design meets the specification • Design a product and make sure that it meets the design criteria including looking attractive (if needed) • Draw annotated designs with labels that detail their material choices and suitability of the given materials • Learn about inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products. • Start to understand whether their products can be recycled or reused. • When planning, explain their choices of materials and components, including function. • develop their own ideas through drawings, making templates or mock ups of their initial ideas using ICT (if needed).	• Research as a matter of course before considering designing a product. • Use ideas from other people when designing e.g. creating a mood board of existing products • Confidently make labelled drawings from different views, showing specific features. • Produce a plan and explain the use of materials, equipment and processes • Persevere and adapt work when original ideas do not work • If the first attempt fails, identify strengths and future areas for development. • Communicate ideas through annotated sketches that show different viewpoints of the product • Begin to very familiar with different inventors, designers, engineers, chefs and manufacturers who have developed ground breaking products.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Lower Key Stage 2

	Year 3	Year 4
Making	• Follow a step-by-step plan, choosing the right equipment and materials • Select the most appropriate tools and techniques for a given task • Work accurately to measure, mark out, make cuts, score, make holes and assemble components with more accuracy. • Start to work safely and accurately with a range of simple tools. • Choose finishing techniques to improve the appearance of their products using a range of equipment including ICT • Start to understand that mechanical systems (such as levers and linkages) create movement. • Start to think about their ideas as they make their product and be willing to change things if they help them to improve their work. • Start to measure, tape or pin, cut and join fabric with some accuracy.	• Know which tools to use for a particular task and show knowledge of handling the tool accurately and safely. • Know which material is likely to give the best outcome based on its properties • Mark, measure and cut accurately a range of materials using appropriate tools, equipment and techniques. • Start to join and combine materials and components accurately in temporary and permanent ways. • Sew, weave or knit using a range of stitches • Show high levels of perseverance when things do not go as they would wish in the first instance. • Start to understand the mechanical and electrical systems have an input, process and output. • Know how mechanical systems (such as pulleys or gears) create movement. • Know how simple electrical circuit and components can be used to create functional products. • Understand how to reinforce and strengthen a 3d framework. • Begin to use finishing techniques to strengthen and improve their appearance of their product using a range of equipment, including ICT

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Lower Key Stage 2

	Year 3	Year 4
Evaluating	• Explain how to improve a finished model • Know why a model has or has not been successful • Evaluate their product against their original design criteria (e.g. how well it meets its intended purpose). • Begin to disassemble and evaluate familiar products and consider the views of others to improve them. • Evaluate the key designs of individuals in DT has helped shaped the world.	• Evaluate and suggest improvements for designs • Evaluate products for both their purpose and appearance • Evaluate their own and others work • Evaluate their product, carrying out appropriate tests. • Evaluate their product both during and at the end of the assignment. • Present a product in an interesting way • Be able to disassemble and evaluate familiar products and consider the views of others to improve them.
Technical Knowledge	• Know how to strengthen a product by stiffening a given part or reinforce a part of the structure • Use a simple IT program within the design • Create a product that incorporates a pulley mechanism.	• Link scientific knowledge by using lights, switches or buzzers • Use IT where appropriate to add to the quality of the product • Create a product that incorporates at least one lever.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Lower Key Stage 2

	Year 3	Year 4
Food Technology	• Describe how food ingredients come together • Weigh out ingredients and follow a given recipe to create a dish • Know when food is ready for harvesting • Demonstrate hygienic food preparation • Understand how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of heat source. • Begin to understand how to use a range of techniques, such as peeling, chopping, slicing, gracing, mixing, spreading, kneading and baking. • Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.	• Bring a creative element to the food product being designed • Know which season various foods are available for harvesting • Recognise safe practices in the kitchen and can identify hazards e.g. hazards when using an oven • Know how to use a range of techniques, such as peeling, chopping, slicing, gracing, mixing, spreading, kneading and baking. • know that to be active and healthy, food and drink are needed to provide energy for the body.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Upper Key Stage 2

	Year 5	Year 6
Designing	• Competently research products similar to the one they are intending to design and evaluate strengths and weakness to be incorporated into their own design. • Research and use ICT where appropriate • Design, with a range of initial ideas, after collecting information from investigating existing products • Produce a detailed, step-by-step plan • Explain how a product will appeal to a specific audience and how it meets the purpose • Create annotated 3D designs of their design on isometric or squared paper from a range of viewpoints. • With growing confidence, apply a range of finishing techniques including those from art and design. • Start to appreciate how make products cost to make.	• When researching, be competent in discriminating as to what would be and would not be helpful for their intended product. • Use market research of existing products to inform their design • Follow and refine original plans, justifying it in a convincing way • Draw detailed 3D designs using exploded diagrams or cross sectional drawing where appropriate to display finer details • Show that culture and society is considered in plans and design specification • Show thought has been given to materials relating to recycling and sustainability. • Know how much products cost and make choices accordingly.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Upper Key Stage 2

	Year 5	Year 6
Making	• Name and use a range of tools and equipment competently • Select appropriate materials, tools and technique (e.g. 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. • Incorporate mechanical systems (such as pulleys or gears) to create movement in their products. • Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. • Use finishing techniques to strengthen and improve the appearance of their products using a range of equipment including ICT. • Make a prototype before making a final version • Carry out finishing techniques to enhance the appearance and function of their product	• Confidently select appropriate tools, materials, components and techniques and use them efficiently. • Know how to use any tool correctly and safely • Know what each tool is used for • Explain why a specific tool is best for a specific action • Make modifications go along and explain their reasons. • Construct products using permanent joining techniques. • Use mechanical systems such as pulleys and gears competently to create movement in their products. • Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. • Use finishing techniques to strengthen and improve the appearance of their products using a range of equipment including ICT. • Pin, sew and stitch materials together to create a product

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Upper Key Stage 2

	Year 5	Year 6
Evaluating	• Suggest alternative plans; outlining the positive features and drawbacks • Evaluate appearance and function against original criteria • Begin to evaluate their product personally and seek evaluation from others. • Evaluate a product against original design specifications and by carrying out tests.	• Test and evaluate designed products with specified audience where possible • Explain how products should be stored and give reasons • Evaluate product against clear criteria • Evaluate their work both during and at the end of the assignment. • Record their evaluations using drawing with labels.
Technical Knowledge	• Suggest alternative plans; outlining the positive features and drawbacks • Evaluate appearance and function against original criteria • Create a product that incorporates gears.	• Know which IT product would further enhance a specific product • Use knowledge to improve a made product by strengthening, stiffening or reinforcing • Use electrical systems correctly and accurately to enhance a given product • Know when a product they have made is improved by either the use of pulleys, levers or gears.

DESIGN TECHNOLOGY: KNOWLEDGE AND SKILLS

Upper Key Stage 2

	Year 5	Year 6
Food Technology	• Be both hygienic and safe in the kitchen • Know how to prepare a meal by collecting the ingredients in the first place • Weigh and measure accurately (timings, dry ingredients and liquids) • Begin to understand that seasons may affect the food available. • Understand how food is processed into ingredients that can be eaten or used in cooking. • Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically, including where appropriate, the use of a heat source. • Begin to understand that different food and drink contain different substances – nutrients, water and fibre – that are needed for health.	• Explain how food ingredients should be stored and give reasons • Work within a budget to create a meal • Understand the difference between a savoury and sweet dish • Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically, including where appropriate, the use of a heat source. • Know different food and drink contain different substances – nutrients, water and fibre – that are needed for health.

DT Activities

Driven by knowledge and skills breakdown and looking for natural links with Science, History or Geography

	Important considerations	Autumn	Spring	Summer
Year 1	• Make products with one moving part (sliders, wheels and axles) • Begin to assemble and join materials (finishing techniques, cut and measure)	**Textiles(join by glue):** Assembling and joining using glue associated with the school and Rochdale e.g. logos	**Mechanisms (one moving part):** Create a simple pop up toy using different materials incorporating the use of a slider – (textiles, junk material and card)	**Mechanisms (axle):** Create a swing for a play person which includes a moving part making use of stiff card incorporating an axle
Year 2	• Make products with at least two moving parts, incorporating sliders and linkages • Explore wheels and axles. • Introduce sewing products.	**Structures (tall and stable):** Create a tall structure of at least 30cm (something that looks aesthetically pleasing having explored tall buildings in London) using a range of straws, junk material, card	**Textiles (join by sewing) and Structures (stable):** Create a Kenyan village mud hut with a textile roof which incorporates an African style design (which includes some sewing) and is aesthetically pleasing. Base made of a malleable material e.g. clay, plasticine	**Mechanisms (axle and wheels):** Create a moving vehicle with axles and wheels – links to historical unit on transport and reflects transport through the ages

DT Activities

Driven by knowledge and skills breakdown and looking for natural links with Science, History or Geography

	Important considerations	Autumn	Spring	Summer
Year 3	• Make products which includes pulleys • Measure more accurately • Introduce greater levels of ICT	**Textiles (measuring and creative):** Create a weaving loom to use to produce a A4 floor mat which incorporates a range of textiles and textures	**Structures (stable and creative)** Create an aesthetically pleasing structure specifically for the town of Rochdale taking account of large structures such as The Angel of the North. Made from construction kits e.g Meccano	**Mechanisms (pulley):** Create a mechanism for loading objects onto a boat which incorporates a pulley system (lifting 1 kg) - links to geography unit of rivers
Year 4	• Make products to include at least one lever • Introduce electrical circuits • Strengthen 3d frameworks	**Mechanisms (lever):** Create a Roman weapon to propel a marble one metre which is operated by a lever system	**Textiles (Running Stitch)** Create a A4 personal flag for the opening ceremony of the Ancient Greek Olympics which incorporates a running stitch	**Mechanisms (incorporating a simple electrical circuit):** Create an electrical torch which incorporates changing colours e.g. kaleidoscope

DT Activities

Driven by knowledge and skills breakdown and looking for natural links with Science, History or Geography

	Important considerations	Autumn	Spring	Summer
Year 5	• Make products to include gears • Create prototypes before making final design	**Structures (use of recycled materials) –** Create a structure including a prototype to reflect an aspect of European life which could become a European landmark out of recycled materials	**Textiles (applique and at least 3 different stitches):** Taking account of the Bayeaux Tapestry create a textile product which tells a story and incorporates fabric sewn onto fabric (applique) and stitch detail	**Mechanisms (gears):** Create a water mill system for a developing country which incorporates gears and links to Fairtrade
Year 6	• Ability to choose appropriate mechanisms, such as gears, pulleys or levers • Raise awareness of cost associated with making a product	**Mechanisms (Applying previous knowledge of axles, sliders, wheels, pulleys, levers and gears):** Create a an armed vehicle capable of moving over different terrain which incorporates gears and a pulley system	**Structure and Textiles (Stable and appropriate for setting):** Create a camouflaged nomadic tent that would a suitable for a desert incorporating a stable structure and a range of joining techniques	**Mechanisms (a complex electrical circuit with multiple components):** Create a traffic light system that involves the use of IT

DT: Key Stage 1

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
	Design - purposeful, functional, appealing products for themselves and other users based on design criteria *Design - generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology*	*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*	*explore and evaluate a range of existing products* *evaluate their ideas and products against design criteria*	*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.*	*use the basic principles of a healthy and varied diet to prepare dishes* *understand where food comes from*
Year 1	• use own ideas to design something and describe how their own idea works • design a product which moves • explain to someone else how they want to make their product and make a simple plan before making	• use own ideas to make something • make a product which moves • choose appropriate resources and tools	• describe how something works • explain what works well and not so well in the model they have made	• make their own model stronger	• cut food safely
Year 2	• think of an idea and plan what to do next • explain why they have chosen specific textiles	• choose tools and materials and explain why they have chosen them • join materials and components in different ways • measure materials to use in a model or structure	• explain what went well with their work	• make a model stronger and more stable • use wheels and axles, when appropriate to do so	• weigh ingredients to use in a recipe • describe the ingredients used when making a dish or cake

DT: Key Stage 2

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
	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*	*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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products 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*	*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.*	*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*
Year 3	• prove that a design meets a set criteria. • design a product and make sure that it looks attractive • choose a material for both its suitability and its appearance	• follow a step-by-step plan, choosing the right equipment and materials • select the most appropriate tools and techniques for a given task • make a product which uses both electrical and mechanical components • work accurately to measure, make cuts and make holes	• explain how to improve a finished model • know why a model has, or has not, been successful	• know how to strengthen a product by stiffening a given part or reinforce a part of the structure • use a simple IT program within the design	• describe how food ingredients come together • weigh out ingredients and follow a given recipe to create a dish • talk about which food is healthy and which food is not • know when food is ready for harvesting
Year 4	• use ideas from other people when designing • produce a plan and explain it • persevere and adapt work when original ideas do not work • communicate ideas in a range of ways, including by sketches and drawings which are annotated	• know which tools to use for a particular task and show knowledge of handling the tool • know which material is likely to give the best outcome • measure accurately	• evaluate and suggest improvements for design • evaluate products for both their purpose and appearance • explain how the original design has been improved • present a product in an interesting way	• links scientific knowledge by using lights, switches or buzzers • use electrical systems to enhance the quality of the product • use IT, where appropriate, to add to the quality of the product	• know how to be both hygienic and safe when using food • bring a creative element to the food product being designed

DT: Key Stage 2

	Designing	Making	Evaluating	Technical Knowledge	Food Technology
	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*	*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 wide range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities*	*investigate and analyse a range of existing products 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*	*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.*	*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*
Year 5	• come up with a range of ideas after collecting information from different sources • produce a detailed, step-by-step plan • explain how a product will appeal to a specific audience • design a product that requires pulleys or gears	• use a range of tools and equipment competently • make a prototype before making a final version • make a product that relies on pulleys or gears	• suggest alternative plans; outlining the positive features and draw backs • evaluate appearance and function against original criteria	• links scientific knowledge to design by using pulleys or gears • uses more complex IT program to help enhance the quality of the product produced	• be both hygienic and safe in the kitchen • know how to prepare a meal by collecting the ingredients in the first place • know which season various foods are available for harvesting
Year 6	• use market research to inform plans and ideas. • follow and refine original plans • justify planning in a convincing way • show that culture and society is considered in plans and designs	• know which tool to use for a specific practical task • know how to use any tool correctly and safely • know what each tool is used for • explain why a specific tool is best for a specific action	• know how to test and evaluate designed products • explain how products should be stored and give reasons • evaluate product against clear criteria	• use electrical systems correctly and accurately to enhance a given product • know which IT product would further enhance a specific product • use knowledge to improve a made product by strengthening, stiffening or reinforcing	• explain how food ingredients should be stored and give reasons • work within a budget to create a meal • understand the difference between a savoury and sweet dish