John Keble CE School

Design and Technology Curriculum

Rooted together in love, growing without limits.

Believing in the worth of every individual, we are a nurturing, Christian sanctuary of learning, where all can flourish. We aspire for everyone to achieve heights of success, to deepen courage and to experience breadth of creativity, knowing the joy of God's love.

Whole school curriculum intent
Our ambitious, knowledge-rich curriculum has been sequenced to equip our pupils with the knowledge and skills to ensure they are happy, healthy global citizens, ready to take their place in modern Britain. The broad and balanced curriculum is creative, coherent and inclusive and, together with our Christian values, enables the pupils to be self-motivated, independent learners.
Subject specific curriculum intent: design and technology
At John Keble, we aim to ensure that all pupils: develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world. That they build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users. Pupils should be given the opportunities to critique, evaluate and test their ideas and products and the work of others. Finally pupils should understand and apply the principles of nutrition and learn how to cook.
Implementation and impact:
Across key stage 1 and 2, a total of 18 units (3 per year) are taught. These cover a range of areas such as structure, mechanism, textiles, electrical systems and cooking and nutrition. The units are pitched so that pupils with different starting points can access them. Lessons within a unit are sequenced so that each one builds on prior learning. The activities are scaffolded so all children can succeed and they provide scope for all to be challenged. The units of work allow for both substantive and disciplinary knowledge to be taught. Substantive knowledge is organised into four interrelated disciplines designing, making, evaluating and technical knowledge to ensure that pupils' knowledge, skills and understanding are built upon through successive years towards clearly identified year group learning outcomes. Disciplinary knowledge in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. At the end of each unit, pupils will be given an end of unit task. This will be an opportunity for the pupils to showcase their learning and what they have understood in a task. Class teachers will be able to use it as a tool to assess the pupils.

Introduction to John Keble's key stage 1 and 2 design technology

Year Group	Term	Unit Title	Year Group	Term	Unit Title
1	Autumn 1	Christmas cards	2	Autumn 2	Pop up cards
	Summer 1	Moving vehicles		Spring	Textiles
	Summer 2	Cooking -		Summer 2	Cooking
3	Spring 1	Structures: food container Something: food packaging Someone: themselves Some purpose: to store their oat bar they will create in DT	4	Autumn 1	Electrical systems: traffic lights
	Spring 2	Cooking and nutrition: Healthy diet Something: snacks for a packed lunch Someone: themselves Some purpose: to further develop an understanding of a balanced diet		Spring 1	Mechanical systems: Levers and linkages Something: persuasive poster Someone: ECO JLT Some purpose: to persuade people to recycle
	Summer 2	Textiles: Money containers Something: money container Someone: themselves Some purpose: store their money		Summer 1	Structures: Bridges Something: a bridge Someone: people driving to the power station Some purpose: to allow vehicles to cross a river
5	Autumn 1	Mechanical systems: pulleys	6	Autumn 2	Mechanical systems: Cars
	Spring 1	Electrical systems: cams Something: a moving toy Someone: your children Some purpose: to retell a story		Summer 1	Cooking and nutrition: Preparing a savoury dish Something: Burger Someone: themselves Some purpose: to make a meal that uses little waste and can be eaten as part of a balanced diet.
	Summer 1	Cooking and nutrition: seasonality Something: soup Someone: themselves Some purpose: to make a seasonal and sustainable soup		Summer 2	Textiles: Fabric mobile phone holder Something: phone case Someone: themselves Some purpose: to store their mobile phone in

National Curriculum – Key Stage 1

Area	National Curriculum objectives	Where covered
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	Yr 1 A1 / Yr 1 Su 1 / Yr 2 Su1 / Yr 2 Su2 Yr 1 A1 / Yr 1 Su 1 / Yr 2 A2 / Yr 2 Su1
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	Yr 1 A1 / Yr 1 Su 1 / Yr 2 A2 / Yr 2 Su1 / Yr 2 Su2 Yr 1 Su 1 / Yr 2 A2 / Yr 2 Su1/ Yr 2 Su2
Evaluate	● explore and evaluate a range of existing products ● evaluate their ideas and products against design criteria	Yr 1 A1 / Yr 1 Su 1 Yr 1 A1 / Yr 1 Su 1
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	Yr 1 Su1 Yr 1 A1 / Yr 1 Su 1/ Yr 2 A2
Cooking and nutrition	● use the basic principles of a healthy and varied diet to prepare dishes ● understand where food comes from.	Yr 1 Su2 / Yr 2 Su2 Yr 1 Su2 / Yr 2 Su2

National Curriculum – Key Stage 2

Area	National Curriculum objectives	Where covered
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	Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 / Yr 4 Su1 / Yr 5 Sp1 / Yr 5 Su 1/ Yr 6 Au1 / Yr 6 Su2/ Yr 6 Su1 Yr 3 Sp1/ Yr 3 Su2 / Yr 4 A1/ Yr 4 Sp1 / Yr 5 Sp1 / Yr 5 Su 1 / Yr 6 Au1 /Yr 6 Su1 / Yr 6 Su2
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	Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 /Yr 4 A1 / Yr 4 Sp1 / Yr 4 Su1/ Yr 5 Sp1/ Yr 6 Au1 / Yr 6 Su2 Yr 3 Sp2 / Yr 3 Su2 / Yr 4 Su1 / Yr 5 Su 1 /Yr 6 Su1/ Yr 6 Su2
Evaluate	• 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	Yr 3 Sp1 / Yr 3 Su2 / Yr 4 Su1 / Yr 5 Su 1/ Yr 6 Su1 Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 / Yr 4 A1 / Yr 4 Sp1 / Yr 4 Su1 / Yr 5 Sp1 / Yr 5 Su 1 / Yr 6 Au1 / Yr 6 Su1 Yr 4 A1 / Yr 4 Su1 / Yr 6 Au1
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	Yr 3 Sp1 / Yr 4 Su1 / Yr 5 Sp1 Yr 5 A1 / Yr 5 Sp1 / Yr 6 Au1 Yr 4 A1 / Yr 4 Sp1 / Yr 6 Au1 Covered in Yr 5 Spring 1 and 6 computing
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.	Yr 3 Sp2 / Yr 5 Su 1 / Yr 6 Su1 Yr 3 Sp2 / Yr 5 Su 1 / Yr 6 Su1 Yr 3 Sp2 / Yr 5 Su 1 / Yr 6 Su1

Year 1 - DT						
Term	**Key topic content**	**Materials and mechanisms**	**Construction**	**Textiles**	**Food**	**Planning and evaluating**
	Children learn about…	**Children learn how to…**				
Aut 2	Christmas cards	Fold, tear and cut paper and card Use hole punch		Cut shapes from fabric Join different materials		Talk about what they like and don't like about what they made based on design criteria Talk about what they are making and what they are using to make it Select materials and tools from a limited range Describe what they need to do next Talking about existing products (e.g. what do they like about them?)
Sum 1	Construction	Roll paper to create and tubes, curl paper and investigate joinings	Use construction kits to make vehicles with 2 wheels on axles Create models with wheels and axles Explore different ways to make structures stronger			
Sum 2	Fruit/vegetable salad				Describe food using senses Group fruits and vegetables Cut, peel, grate and chop Work safely and hygienically with an adult Group fruits and vegetables and talk about where they come from	

Year 2 – DT						
Term	**Key topic content**	**Materials and mechanisms**	**Construction**	**Textiles**	**Food**	**Planning and evaluating**
		Children learn how to…				
Aut 2	Pop-up Christmas cards	Fold, tear and cut paper and card, using straight and curved lines Use simple pop-ups Create hinges	Mark out materials to be cut from a template Join appropriately for different materials e.g. glue/tape			Discuss strengths and weaknesses of a design Name the tools they are using Select a technique Add notes to drawing to help explain what they are doing based on design criteria Explore ideas by arranging materials Talking about existing products (e.g. how have they been made?)
Sum 1	Textiles			Colour fabrics for example by printing Join fabrics Decorate fabrics e.g. with buttons, ribbons etc		
Sum 2	Food				Grow their own food from seeds and/or bulbs and make something to eat with this	

Year 3 –Construction shell

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To investigate structures	• explore how well products have been designed why materials have been chosen • investigate what methods of construction have been used • investigate how well products work • investigate how well products meet user needs and wants	structure shell structure corrugated prism	ribbed laminated cuboid cylinder
2	To construct nets to create 3D shapes	• make strong, stiff shell structures • measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy	net cuboid	prism scoring
3	To evaluate existing structures	• explore who designed and made existing products • investigate where products were designed and made • learn when products were designed and made	product analysis function	shell structure solid structure combination structure
4	To develop a design brief and to sketch ideas for the product	• develop their own design criteria and use these to inform their idea • generate realistic ideas, focusing on the needs of the user • model their ideas using prototypes • use annotated sketches to develop and communicate their ideas	design brief purpose product	user sketch annotate
5	To design, make and evaluate structures	• refer to their design criteria as they design and make • consider the views of others, including intended users, to improve their work	structure design specification	making evaluating
6	To measure, mark out, cut and shape materials	• use annotated sketches and cross-sectional drawings to develop and communicate their ideas • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy	assembling measuring	shaping accuracy

Year 3 - cooking

- NC objectives: D 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- C&N: understand and apply the principles of a healthy and varied diet
- C&N: prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- C&N: understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To use research to develop design criteria	• learn how well products meet user needs and wants • understand why ingredients have been chosen that food ingredients can be fresh, pre-cooked and processed • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their idea	Target market market research Design criteria analysis	questionnaire nutrients processed pre-cooked fresh
2	To design a product for a target market	• describe the purpose of their products the correct technical vocabulary for the projects they are undertaking • select tools and equipment suitable for the task select materials and components suitable for the task • make design decisions that take account of the availability of resources • order the main stages of making • indicate the design features of their products that will appeal to intended users	target market ingredients nutrients design brief	
3	To prepare and cook savoury dish	• assemble, join and combine materials and components with some accuracy • follow procedures for safety and hygiene use a wider range of materials and components than Key Stage 1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components • use their design criteria to evaluate their completed products • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	design criteria evaluation product bias hygiene ingredients	claw grate bridge
4	To explore food and where it comes from	• understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the 'Eatwell Guide' • understand that to be active and healthy, food and drink are needed to provide energy for the body	Grown reared fresh	pre-cooked caught processed
5	To evaluate a product develop ideas further	• indicate the design features of their products that will appeal to intended users • select tools and equipment suitable for the task select materials and components suitable for the task • make design decisions that take account of the availability of resources order the main stages of making	design criteria evaluation	product dried fruit
6	To prepare and cook savoury dish	• assemble, join and combine materials and components with some accuracy follow procedures for safety and hygiene use a wider range of materials and components than Key Stage 1, including food ingredients • use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • understand that food ingredients can be fresh, pre-cooked and processed • use the correct technical vocabulary for the projects they are undertaking	hygiene ingredients blend dried fruit processed	claw grate bridge pre-cooked fresh

Year 3 -Textiles

- NC objectives: D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- D: 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will learn	Vocabulary	
1	To explore a range of existing products	• discuss what products are what products are for • discuss who products are for • discuss how products are used where products might be used • explore what materials products are made from • say what they like and dislike about products • Create a class design criteria	evaluating existing purpose user	
2	To experiment with different joining techniques	• learn about the simple working characteristics of materials and components • understand a 3-D textiles product can be assembled from two identical fabric shapes • practise joining materials using different stitching techniques • Decide what will be the most suitable stitch for joining materials	running stitch over stitch back stitch	
3	To create a flow chart, identifying steps	• design their money container using annotated drawings • Discuss the process of making their money container • Create a flow chart, identifying what they will do, step by step	Flow chart step by step	instructions
4	To use a wider range of tools and equipment to perform practical tasks	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use accurate measurements when cutting out	running stitch over stitch back stitch	template measurement
5	To explore finishing techniques	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	applique appealing	finishing techniques
6	To evaluate a finished product	• say what they like and dislike about products • suggest how their products could be improved • make simple judgements about their products and ideas against design criteria	evaluating purpose user	design criteria design brief

Year 4 - DT						
Term	**Key topic content**	**Materials and mechanisms**	**Construction**	**Textiles**	**Food**	**Planning and evaluating**
		Children learn how to…				
Aut 1	Construction - electricity	Cut slots and internal shapes	Incorporate a circuit with a bulb or buzzer into a model			Record a planned sequence of actions using drawings and words/notes, developing design criteria as a class Suggest possible tools and materials Make realistic suggestions for how something might be achieved or improved based on the design criteria Analyse the strengths and weaknesses of existing products Understand how key events and individuals in design and technology have helped to shape the world (e.g. an individual who has produced a similar product)

Year 4 - levels and linkages

- NC objectives: D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Lesson number	Learning objective	Pupils will learn	Vocabulary	
1	To understand how a range of mechanisms create movement	• understand how mechanical systems such as levers and linkages or pneumatic systems create movement • use the correct technical vocabulary for the projects they are undertaking • understand how mechanical systems such as levers and linkages or pneumatic systems create movement	mechanism lever slot pivot desgin brief	recycle
2	To design a product criteria, meeting the needs of the user	• generate realistic ideas, focusing on the needs of the user share and clarify ideas through discussion • use the correct technical vocabulary for the projects they are undertaking • understand how mechanical systems such as levers and linkages or pneumatic systems create movement	mechanism persuasive design brief recycle	lever bridge loose pivot fixed pivot
3	To use a range of techniques to create a prototype	• measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy	mechanism lever linkages	design brief prototype sketch
4	To generate and develop design ideas	• indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work • use annotated sketches to develop and communicate their ideas • order the main stages of making • use exploded diagrams to develop and communicate their ideas • refer to their design criteria as they design and make	mechanism exploded diagram design brief	bridge loose pivot fixed pivot
5	Use a range of techniques to begin to make a final idea	• measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy • use a wider range of materials and components than Key Stage 1, including mechanical components • use their design criteria to evaluate their completed products	mechanism lever linkages	adaptation design brief prototype
6	To evaluate the final product, considering the views of others	• use the correct technical vocabulary for the projects they are undertaking • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	design criteria evaluation	product mechanical system

Year 4 – Construction - solid

- NC objectives: D: 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- E: understand how key events and individuals in design and technology have helped shape the world
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore ways in which pillars and beams are used to span gaps.	● learn about how simple bridges are constructed using beams, pillars or piers, ● make and test beam bridge designs.	engineers beam pillars	piers
2	To explore ways in which trusses can be used to strengthen bridges.	● learn how trusses are used in bridge design to spread out compression forces. ● build and test model truss bridges	engineers truss compression force	
3	To explore ways in which arches are used to strengthen bridges.	● learn how arches are used to spread and redirect compression forces acting on bridges. ● build and test model arch bridges.	engineering stone bridge arch bridge abutments	iron steel compression force
4	To understand how suspension bridges are able to span long distances.	● learn about how suspension bridges use tension to support bridge decks spanning large distances. ● learn about Brunel and his achievements with bridge development	Brunel suspension bridge distribute	compression force vertical anchored
5	To develop criteria and design a prototype bridge for a purpose.	● develop criteria for a bridge design that will meet the terms of the brief. ● design a bridge according to their criteria	prototype design criteria	
6	To analyse and evaluate products according to design criteria.	● consider ways in which they might test their bridge design ● build and test their designs.	prototype evaluate	

Year 5 - DT						
Term	**Key topic content**	**Materials and mechanisms**	**Construction**	**Textiles**	**Food**	**Planning and evaluating**
		Children learn how to…				
Aut 1	Pulleys	Understand and use pulleys (e.g. to make a lifting product)				Model alternative ideas Record ideas using annotated diagrams, developing design criteria as a class Justify decisions about materials, tools and methods chosen Write a report about a completed project Use Sketch-up or a similar program to explore computer-aided design Consider the views of others to improve their work Understand how key events and individuals in design and technology have helped to shape the world (e.g. an individual who has produced a similar product)

Year 5 – cooking

- NC objectives: D: 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
- M: 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
- E: 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
- C&N: understand and apply the principles of a healthy and varied diet
- C&N: prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- C&N: understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore where food comes from	• understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • learn how food is processed into ingredients that can be eaten or used in cooking	grown reared caught processed seasonality	source fresh pre-cooked
2	To explore how sustainable a product is	• understand the journey food goes on • explore what foods are grown locally • evaluate how sustainable a product is	manufacturer mass-produced	food miles sustainable sustainability
3	To understand the needs of a healthy varied diet	• work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment that a recipe can be adapted by adding or substituting one or more ingredients the correct technical vocabulary for the projects they are undertaking	healthy varied values nutrition	preferences wants needs diet
4	To consider the views of others to improve a product	• understand that different food and drink contain different substances - nutrients, water and fibre - that are needed for health • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	evaluate sensory inform	
5	To design a dish based on a design brief	• how sustainable the materials in products are about chefs and manufacturers who have developed ground-breaking products	design specification user	
6	To prepare and cook savoury dish	• how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • why materials have been chosen • how well products achieve their purposes • how well products meet user needs and wants	cooking food hygiene cross contamination	claw bridge combining

Year 5 - Cams

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- TK:understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Lesson number	Learning objective	Pupils will	Vocabulary
1	To investigate toys with moving cam mechanisms.	● investigate different moving toys. ● learn about cam mechanisms and explore different toys that use them	cam, follower, dowel, linkage system, rotary movement, linear movement
2	To investigate different types of cam mechanisms.	● explore and investigate different types of cam mechanisms ● think about the shapes they will produce. ● test different shaped cams to see how they affect the linear movement of the follower.	cam, follower, dowel, linkage system, rotary movement, linear movement
3	To investigate ways of strengthening structures for a moving toy.	● explore materials and investigate different ways of strengthening moving toy structures. ● make suggestions for how they could make a sturdy structure for a moving toy	structure, base, Stability Base, Centre of Gravity Buttress, sturdy
4	To be able to design a moving toy with a cam mechanism.	● use their previously learnt knowledge to design a moving toy with a cam mechanism. ● think about who the toy is for, what shape the cam will be, the structure, decoration and materials needed to construct it.	design criteria, appealing, sequence, annotated diagram, sketch, decision, choice, prototype, model, communicate
5	To be able to follow a design to create a moving toy with a cam mechanism.	● refer to their designs from the previous lesson to create their moving toys.	shape, assemble, accurate, saw, mark out cam, mechanism, movement, linear motion, rotary motion, pivot, off-centre, axle, force, framework, follower, guide, offset, shaft
6	To be able to evaluate a finished moving toy.	● demonstrate their finished moving toys, ● evaluate both their process and their finished product, either individually or with a partner.	evaluate, successful, improvements, achieved.

Year 6 - DT						
Term	**Key topic content**	**Materials and mechanisms**	**Construction**	**Textiles**	**Food**	**Planning and evaluating**
		Children learn how to…				
Aut 1	Construction - electricity		Incorporate a motor and switch into a model			Plan a sequence of work using a flowchart which can be followed by someone else, generating their own design criteria and thinking about target audience Research and use found information to inform decisions Discuss how well a finished product meets the needs of the user using design criteria Explore using cross-sectional and exploded diagrams to develop ideas Understand how key events and individuals in design and technology have helped to shape the world (e.g. an individual who has produced a similar product)

Year 6 – Textiles

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E:evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore what impact products have beyond their intended purpose	● learn that materials have both functional properties and aesthetic qualities ● use the correct technical vocabulary for the projects they are undertaking ● discuss what impact products have beyond their intended purpose, the negative impact of the textiles industry	modern smart materials fabric	natural fibres synthetic fibres
2	To explore fast fashion	● explore what is meant by fast fashion ● discuss ways of being more sustainable with clothing	Sustainable Recycle	
3	To use a wider range of tools and equipment to perform practical tasks	● explore different types of stitches, consolidating work from year 2 and 3	Thread Stich Running stitch	Cross stitch Back stitch
4	To generate and develop design ideas	● write a design brief for the project based on a set of requirements ● use annotated sketches to develop and communicate their ideas ● use the correct technical vocabulary for the projects they are undertaking ● critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make ● formulate step-by-step plans as a guide to making accurately	Development Function	Sketch Form
5	To use a wider range of tools and equipment to perform practical tasks	● mark out and cut templates / pattern pieces ● tac and pin pattern pieces ● select tools and equipment suitable for the task ● select materials and components suitable for the task ● apply a range of finishing techniques,	Temporary Quality control Fastoning	Manufacture Pattern piece Finish Embroidery
6	To evaluate a final product against a design criteria	● evaluate their ideas and products against their original design specification ● explain what impact products have beyond their intended purpose	Evaluate Sustainability	

Year 6 -cooking

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- C & N: investigate and analyse a range of existing products
- C&N: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will	Vocabulary
1	To discuss what influences our food choices	● discuss the factors that influence our decisions. ● explore how to adapt and use their own recipes ● taste a range of different products and share thoughts / likes / dislikes e.g. bread types, burgers, toppings, sauces. ● explore ingredients in types of food.	factor, function, nutrition, Consume, impact, diet, healthy
2	To conduct research to influence design choice	● conduct market research to influence decision ● unpick a design brief ● work as a group to plan out a selection of recipes including toppings in burgers	adapt, design specification, costing, innovative, manufacturing resources
3	To conduct research to influence design choice	● explore how to actively minimise food waste such as composting fruit and vegetable peelings and recycling food packaging ● use these investigation to influence their recipe design	food waste, microorganisms, environment
4	To conduct research to influence design choice	● be given a budget to spend on food ● cost their ingredients and record using a spreadsheet ● explore how to make their products in the most effective ways e.g reduce the amount of meat and include vegetables such as grated carrot to bulk their burgers. ● create a final shopping list	adapt, design specification, innovative, manufacturing, resources, costing
5	To generate and develop design ideas	● create their final design of their completed burger using, annotated sketches, cross-sectional and exploded diagrams	adapt, design specification, annotated sketches, cross-sectional, exploded diagrams, innovative, manufacturing, resources, costing
6	Health and safety: preparation and hygiene	● prepare and cook a savoury dish safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking ● evaluate how well products achieve their purposes ● evaluate how well products meet user needs and wants	preparation techniques, cooking techniques, utensils, procedures, safety, hygiene