Design Technology	ADVENT	LENT	PENTECOST
YEAR 1	Mechanisms Moving Pictures	Structures -Habitats	Textiles -Puppets
	Learn how simple levers and sliders create movement. Use materials and equipment safely.	Begin to use reclaimed materials and construction kits to create a habitat for a given purpose.	Learn to use scissors to cut and shape fabrics and join with glue or stitch.
YEAR 2	3D Dinosaur Models	Mechanics-Vehicles	Masks and Instruments
	Has knowledge of joining 2D and 3D materials in different ways and safely use equipment.	Learn how wheels and axles work to give a smooth ride. Plan and evaluate a design.	Will start to shape, assemble and join materials to make flexible and rigid products.
YEAR 3	Greeks Structures and Mechanisms	Materials Stone age artefacts	Textiles 2D and 3D plants
			Will create 3D structures from 2D nets using a variety of materials

YEAR 4	Materials-Textiles	Mechanical Structures	Mechanisms- Levers and Pulleys
	To use simple sewing techniques to join fabric securely. Explore ways of changing or adding colour to a design.	Will make simple levers and pivots and develop into more complex linkages and mechanisms	Will explore types of winding and turning mechanisms that include a pulley- Shaduf
YEAR 5	Strengthening Structures Bridges	Mechanisms	Materials Anglo Saxons
	To generate ideas by gathering and using information before designing, testing and evaluating their own design.	Will learn about recycling materials. Using kinetic movement, mobiles and simple circuits	Can measure with a pencil and ruler showing greater accuracy for marking and cutting a variety of materials.
YEAR 6	Measure and mark Materials	Mechanisms	Structures
	Puppets Will use pins and needles safely, starting and finishing work securely. Is able to research suitable finishing and embellishments.	Pneumatic movement and Cams. To combine a variety of materials and tools to create simple models that have moving parts.	Viking long ships and artefacts Show confidence in shaping, assembling and joining materials in a variety of ways.

Design Technology Programmes of Study

Purpose of Study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

The national curriculum for design and technology aims 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

♣ 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

♣ critique, evaluate and test their ideas and products and the work of others

♣ understand and apply the principles of nutrition and learn how to cook.

Subject content Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment]. When designing and making, pupils should be taught to:

Design ♣ design purposeful, functional, appealing products for themselves and other users based on design criteria

♣ generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make ♣ select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]

♣ select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate ♣ explore and evaluate a range of existing products

♣ evaluate their ideas and products against design criteria

Technical knowledge ♣ build structures, exploring how they can be made stronger, stiffer and more stable

♣ explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

Subject Content Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

When designing and making, pupils should be taught to:

Design ♣ use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups

♣ generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make ♣ select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

♣ select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate ♣ investigate and analyse a range of existing products

♣ evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

♣ understand how key events and individuals in design and technology have helped shape the world

Technical knowledge ♣ apply their understanding of how to strengthen, stiffen and reinforce more complex structures

♣ understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

♣ understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

♣ apply their understanding of computing to program, monitor and control their products.

	EXPLORE
1	• look at a variety of existing pop up picture books. • make a hinge, slide, pop up and lever mechanism to see how they work. • research existing and freestanding structures in the school and local environment • build walls, towers and frames with construction kits. • look at the styles of puppets from the past and think about who would have played with them • talk about the materials puppets are made from and how they help create movement.
2	• use construction kits to try out ideas. • find different ways to join 2D and 3D materials. • research how the invention of the wheel was important and its impact on our lives. • test ways that wheels rotate smoothly on an axle. • research how masks were used for ceremonial purpose. • research and design an instrument of African style
3	• research structures in the Greek style and name some of the features- column, frieze, capital, pediment, and colonnade. • find the Greek influences on important local buildings. • look at existing freestanding structures in the school and local environment- shelters • research materials people used for creating nomadic homes past to present. • observe plants and seed pods and draw them in detail. • collect and use synthetic and natural dyes and stains to colour my fabric and paper
4	• research how textiles and soft furnishings are used for comfort in a home, now and in Ancient Roman times • use simple stitching skills- thread a needle, tie a knot and make small running stitches. • recall previous work and make simple mechanisms. • explore and make more complex mechanisms- exploring linkages and pivots • research everyday levers and how they work • explore ways to construct simple winding and turning mechanisms.
5	• research local and wider world bridges to create a fact file. • include features from famous bridge builders in my own design eg- I.K. Brunel, Norman Foster, Zaha Hadid • create a simple circuit and find ways to add a switch, light, buzzer or motor. • explore a variety of recycled materials to create a sound mobile or kinetic design.b • explore colour pattern and shape in my designs and know they are influenced by trade and culture of the time. • research and find similarities in artefacts from the past and present day.
6	• evaluate a range of puppets by their aesthetic and functional qualities,(easily controlled by puppeteer) • explore how fashion designers influence styles and trends by the of colours, patterns and textiles in their collections • learn how a cam and a follower work together as a mechanical movement. • explore automata to understand the way different shaped cams create movement. • generate a range of ideas after collecting information from a variety of sources about long ships and their cargo. • research the textures and properties of materials to ensure they are suitable for purpose of the task.

	DESIGN
1	• design and make my own moving picture using a mechanism. • make a plan for my design with a diagram and labels. • generate ideas based on simple designs and their suitability for a home or habitat. • develop my ideas through talking, mock-ups and drawing • name and describe different styles and features of puppets to inform my own design. • create my design for a puppet with a given purpose/ user.
2	• make labelled drawings of what I want to do • include simple mechanisms to create movement in my designs. • research how the invention of the wheel was important and its impact on our lives. • test ways that wheels rotate smoothly on an axle. • include symmetrical and cultural patterns and colours in my design plan. • use natural and manmade materials in my design.
3	• generate ideas for a simple design based on my research. • develop skills to create an annotated sketch for my design • develop ideas through talking, mock-ups and design drawings, using paper mache to create a shell structure-cave. • explain what I am making and give reasons when following my design- tools and weapons • research a range of flexible textiles and threads for plants and creatures. • design an artificial flower that includes the recognisable parts of a real flower.
4	• explore different letter fonts when designing my cushion • show simple embellishments drawn into my design to be added to my finished work • generate a design and make my own moving picture incorporating a mechanism. • use annotated sketches, cross section diagrams and exploded diagrams to communicate my ideas. • develop my design by testing a selection of components suitable for my shaduf • create a proto type of a shaduf to test my design ideas and to test its strength
	• create an annotated cross section design to show a greater detail of my work • share my research with others when using a construction set and other materials to test out my ideas. • generate a model that has an interesting use of colour, pattern and materials. • show how a simple circuit can be combined with other materials. • include historical ideas from the past when I am designing my work- symmetry and colour. • plan to use appropriate tools and materials in my work.
6	• generate a realistic design for a functional puppet that considers the story setting and its era- Arabic, Islamic origin • select a variety of fabrics for functional-strength/purpose and aesthetic –colour and pattern qualities • make my own shaped cams and followers as I explore mechanical movement. • generate a detailed plan as I design and construct a moving toy with a cam that moves in a linear motion. • produce a detailed , step by step plan to show materials, techniques and equipment needed for the task • how to annotate my plan as a step by step working design.

	MAKE
1	• use a variety of tools and materials safely. • make parts of my design move using appropriate fasteners for the mechanism. • select new and reclaimed materials and construction kits to build a structure • use a simple finishing technique suitable for the structure I have created. • cut and shape paper, card and fabric for my design. • explore ways of joining two materials securely.
2	• choose a suitable glue or tape for the task • use a simple finishing technique in my design. • shape, assemble and join materials in a variety of ways for my vehicle. • finish my vehicle with paint and collage techniques. • shape, assemble and join materials in different ways. • use sandpaper to create a smooth surface.
3	• use a simple finishing technique suitable for the structure I have created- paint , collage • improve my measuring, cutting and folding skills when creating my mechanism. • select and use tools with some independence to develop my skills and techniques when cutting and fixing. • measure my natural and manmade materials, cutting and fixing with some accuracy. • assemble, join and combine materials and components with greater accuracy. • include ideas and techniques used by a designer in my design
4	• draw fabric crayon patterns to iron onto fabric • use fabric paints to create a geometric pattern around my central design • select and use a variety of tools and materials safely. • measure, mark and cut materials out with greater accuracy using centimetres • adapt my design and build one that is more efficient and sturdy • measure, mark and cut materials with greater independence
5	• select materials for my bridge that will give my design strength and stability • use a range of tools and equipment competently and with independence. • show knowledge of cutting materials with greater accuracy and with the correct tools. • use suitable techniques for joining materials securely. • persevere and adapt my work when my original ideas do not work. • I can include a variety of materials patterns and textures to make my work interesting.
6	• use running stitch to securely join two pieces of fabric with accuracy and neatness • incorporate a range of suitable embellishments in my design for finishing • explore and select suitable materials for the task, cutting, shaping and fixing with greater accuracy. • finish my design with decoration appropriate for my design. • use a range of tools and equipment competently to complete the task. • complete my task by securing and finishing all materials neatly.

	EVALUATE
1	• explain how well my mechanism works • talk about my design and say what worked well and what I could change. • evaluate my product and discuss how well it works for the given purpose • explain any changes I would make to improve the finished design. • explain how well my puppet works - is it useable • evaluate how well the puppet is made and suggest ways it could be improved.
2	• use my design plan when decorating my model. • explain how my model works and give reasons, review and suggest how it could be improved. • explain how my vehicle moves and demonstrate how it works • test my vehicle and compare results with others and suggest changes. • use my finished instrument to create sounds. • evaluate my work to the success of my own plan and how it could be improved.
3	• say how well my design has worked having met the given task- create a labyrinth • explain any changes I would make to improve the finished design. • evaluate the product discussing how well it works for the given purpose- • suggest how changes can be made to improve the finished design. • compare features of my artificial flower with a living flower. • say how sturdy/ strong my work is and suggest ways I could improve this
4	• give reasons about the choice of fabric, colour and embellishment for my design. • evaluate how well my finished product is fit for purpose. • confidently demonstrate and explain how a more complex mechanism works • recall my design criteria and consider views from others when evaluating my work. • evaluate my design by including some technical terms – lever, fulcrum, load, balance • share my design ideas by talking with others
5	• evaluate appearance and function against original criteria- can a small vehicle safely travel across the bridge span. • suggest alternative plans; outlining the positive features and draw backs. • identify and say where may design worked well. • share my work with others and accept ideas for improving my design. • evaluate and suggest improvements to my design. • evaluate my work for appearance and purpose and share ideas with others.
6	• test the puppet against t my original design and its intended use • share ideas and suggest changes that I could make to my design and give reasons why • demonstrate that my cam works in a linear motion. • explain the mechanism in detail- how a cam changes rotary motion into linear motion and the role of the cam and follower. • evaluate the appearance and function against the original criteria of my design plan. • I can share my work with others and consider their ideas to improve my work.