Design and Technology

INTENTION, IMPLEMENTATION, IMPACT

East Sheen Primary School	Intentions	Implementation	Impact
Year 1 Sock puppets (Textile)	Pupils will learn: • to identify the features and purpose of sock puppets • to use pictures and words to plan • different ways to join fabrics together • to use a template to create a design for a puppet Pupils will be given the opportunity to develop the following skills: • draw and design • cut, pin/ staple/ glue two pieces of materials together • evaluate the finished product explaining likes and dislikes	Key activities in the unit of work are: • planning and design • using a template to cut and experimenting with different ways to join materials (pinning, stapling, gluing) • making a sock puppet • evaluating their puppet	When assessed, pupils will demonstrate the following sticky knowledge: • identify the features of a sock puppet • identify different ways to join fabrics together Technical vocabulary: • Template • Fabric • draw • Scissors • Cut • Glue • Stapler • Join • Secure • stick
Wheels and axles (Mechanisms)	Pupils will learn: • that mechanisms are a collection of moving parts that work together in a machine • identify mechanisms in everyday objects • how to use wheels and axles • to identify the audience and purpose • to label drawings which illustrates movement • to list tools and materials needed • to follow a plan and suggest what they need to do next • to evaluate the final product	Key activities in the unit of work are: • using toy vehicles to explore how wheels and axles work • designing, labelling and planning • making the vehicle • testing and evaluating their vehicle	When assessed, pupils will demonstrate the following sticky knowledge: • identify the mechanism that makes a vehicle roll forward • understand the topic vocabulary – wheels and axle • understand that for a wheel to move it must be attached to an axle Technical vocabulary: • mechanism • wheels • axle

	Pupils will be given the opportunity to develop the following skills: • draw and design • make the vehicle • test the vehicle, identifying what stops wheels from turning • evaluate the finished product • use scissors for cutting (template of vehicle) • decorate their vehicle		• vehicle • machine • moving parts • movement
Fruit Kebab (Food and Nutrition)	Pupils will learn: • to distinguish between fruits and vegetables • where fruits and vegetables grow and which parts we eat • to describe fruits by texture and taste • the importance of hygienic food preparation Pupils will be given the opportunity to develop the following skills: • prepare fruit and vegetables • use a knife to chop fruits safely with support • to design a healthy fruit kebab for a particular person • to follow a plan to make the fruit kebab	Key activities in the unit of work are: • understanding the difference between fruits and vegetables • understand where they grow and which parts we eat • designing and making a fruit kebab • evaluating their fruit kebab	When assessed, pupils will demonstrate the following sticky knowledge: • identify fruits and vegetables • explain a range of places that fruits and vegetables grow • use knife to cut safely Technical Vocabulary: • fruit • vegetable • seed • Leaf • Root • Stem
Year 2 Christmas stocking (Textile)	Pupils will learn: • to explain purpose of product and how it will be suitable for the user • to use knowledge of existing products to produce ideas • to describe design using pictures, words, models, • to follow a plan and make suggestions as to what they need to do next. • that a 3D textile structure can be made from 2 identical fabric shapes	Key activities in the unit of work are: • Planning and designing a product • Sewing running stitches onto Aida Binca fabric • Making the Christmas stocking • Evaluating their stocking	When assessed, pupils will demonstrate the following sticky knowledge: • identify different ways to join fabric together using sewing skills • identify benefits of running stitches • know different ways to decorate fabric using gluing/ sewing skills Technical vocabulary: • Sewing stitch

	• to join textiles together to make a product using running stitches • to evaluate their product thinking about design criteria Pupils will be given the opportunity to develop the following skills: • draw and design • pin and carefully cut textiles using a template • thread a needle (with support) • sew running stitches (to join the fabric) • decorate the product to make it look good • evaluate their finished product		• Running stitch • Fabric • Thread • Needle • knot • Template • Strong • Secure • Decorate • applique
Moving animals (sliders/levers/wheels) (Mechanisms)	Pupils will learn: • to identify the correct terms for levers, linkages and pivots. • to analyse popular toys with the correct terminology. • to create functional linkages that produce the desired input and output motions. • to design animals which satisfy most of the design criteria. • how to evaluate their designs against the design criteria • select materials to create their planned animal features. • assemble the animals to their linkages without affecting their functionality. Pupils will be given the opportunity to develop the following skills: • creating a design criteria for a moving monster as a class. • making linkages using card for levers and split pins for pivots. • experimenting with linkages adjusting the widths, lengths and thicknesses of card used.	Key activities in the unit of work are: • Pivots, levers and linkages • Making linkages • Designing. the animal • Making the animal	When assessed, pupils will demonstrate the following sticky knowledge: • to know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • to know that a lever is something that turns on a pivot. • to know that a linkage mechanism is made up of a series of levers. Technical vocabulary: • axle • design criteria • input • linkage • mechanical • output • pivot • wheel

	• cutting and assembling components neatly. • evaluating own designs against design criteria.		
Coaster (Structure)	Pupils will learn: • about Antoni Gaudi and his famous and unique creations among them, coasters • to design a coaster in the style of Gaudi • to list tools and materials needed • to follow a plan (and suggest what they need to do next) to create a coaster according to design criteria • to evaluate the final product Pupils will be given the opportunity to develop the following skills: • draw and design • clay techniques (rolling, squeezing, pulling and pinching, soothing out the clay, joining pieces of clay together and carving details into the clay) • create a coaster using clay • evaluate the coaster	Key activities in the unit of work are: • explore Antoni Gaudi's work • designing and planning a coaster in the style of AG • making a coaster • evaluating their coaster	When assessed, pupils will demonstrate the following sticky knowledge: • identify who Gaudi is and what is he famous for • identify the features and purpose of a coaster • identify different clay techniques • understand technical vocabulary: strength, stiffness and stability Technical vocabulary: • strength • stability • stiffness • roll • squeeze • pulling and pinching • soothing • carving • clay
Year 3 Round houses (Structure)	Pupils will learn: • to design a round house for a specific purpose using research to develop design criteria • to make strong structures • to work through plan - begin to order main stages themselves • to identify suitable materials to be selected and used for a round house, considering impermeability (of walls/roof) and weight (for roof) • evaluate round houses Pupils will be given the opportunity to develop the following skills: • drawing and designing • using their hands to roll out a coil from a strip of clay.	Key activities in the unit of work are: • designing and planning a round house • making the walls of a round house • complete the round house by making and adding the roof • evaluating their and others round house	When assessed, pupils will demonstrate the following sticky knowledge: • show an understanding of suitable materials to build a round house and their properties such as impermeability, strength etc • identify clay techniques to strengthen a structure Technical vocabulary: • strength • stability • stiffness • clay • roll • coil

	• pinch and smooth clay to merge layers together to strengthen the wall of the round house • evaluating by suggesting points for modification of their and others round house		• soothing • impermeability
Chocolate boxes (Structure)	Pupils will learn: • evaluate packaging • to design packaging for a specific purpose • to draw nets of 3D shapes using 2D shapes • how a shell structure is formed and how it can be reinforced and strengthened • to transfer a paper design to a digital design • to design using CAD software Pupils will be given the opportunity to develop the following skills: • designing (thinking of catchy slogans – English link) • measuring in cm and using a ruler (maths link) • making 3D shell structures (shapes) by cutting (using scissors), folding, gluing or cello taping the 2D nets • create special features for individual designs • evaluating own work and the work of others based on the aesthetic of the finished product and in comparison, to the original design. • Evaluate the benefits of CAD	Key activities in the unit of work are: • evaluating packaging • design a package by hand and digitally using a computer • making a chocolate box • evaluating their/ others box and the benefits of CAD in creating NETs versus hand drawn ones	When assessed, pupils will demonstrate the following sticky knowledge: • show an understanding of the properties of 3D shapes and their 2D nets • identify shell structures • creating designs for a specific purpose Technical vocabulary: • shell structure • net • 3D shape • packaging • join • reinforce • strengthen
Moving Monsters (pneumatic toys) (Mechanisms)	Pupils will learn: • to explain how pneumatic systems work • to explain why a pneumatic system has been used • to identify the audience and purpose	Key activities in the unit of work are: • identifying the features of pneumatic systems and creating them • designing and labelling a moving monster • planning the moving monster stages • creating the moving monster	When assessed, pupils will demonstrate the following sticky knowledge: • show an understanding of how pneumatic systems work • understand what mechanisms are and that pneumatic systems can be used as part of a mechanism

	• to produce an outline plan that identifies the main stages of making a moving monster toy • to list tools and materials needed • to design a moving monster toy • to manipulate materials to create different effects by cutting, creasing, folding, weaving • to evaluate the final product Pupils will be given the opportunity to develop the following skills: • use syringes (and balloons) to create different types of pneumatic systems • draw and design • assess and evaluate • create a pneumatic toy • use a craft knife for cutting/slicing	• evaluating their and others moving monster	• identify purpose and audience Technical vocabulary: • mechanism • pneumatic • syringe • balloon • motion • force • input • output
Year 4 Poppy badge (Textile)	Pupils will learn: • to identify the features and purposes of poppy badges • to design and make a template from an existing poppy badge and apply individual design criteria • to plan and order the main stages • to make a prototype • to learn different stitches to join fabric together and what a seam is • to incorporate fastening to a design • to evaluate the finished product Pupils will be given the opportunity to develop the following skills: • draw and design • selecting, marking and cutting fabric using a paper template • thread a needle with greater independence • tie a knot with greater independence • use a template to cut out fabric • sew using a variety of stitches	Key activities in the unit of work are: • research • design and plan • learning to sew a button and practice over stitch/ back stitch onto Aida Binca fabric • making a poppy badge • evaluating their and others poppy against the design criteria and suggest modifications for improvement	When assessed, pupils will demonstrate the following sticky knowledge: • identify different stitches • show an understanding of different types of fastening and what they are. • show an understanding of what a seam is Technical Vocabulary: • Stitch, • Backstitch • Running stich • Overstitch • Fastening • Button • Felt • Thread • Needle • Template • Prototype • Seam • Comfortable • Strength • secure

	• sew a button • evaluate the product and decide how many of the criteria should be met for the product to be considered successful		
Anderson Shelter (Structure)	Pupils will learn: • to identify the features and purposes of a shelter • to create an exploded diagram • to build a model • to build a shelter • to strengthen, stiffen and reinforce shell structures Pupils will be given the opportunity to develop the following skills: • investigate, draw and design • select tools to accurately measure, mark out, cut, shape and join construction materials • select materials to build a strong structure. • build strong structures using layers of corrugated card (each layer should have the corrugations travelling at 90 degrees to the layer below). • evaluating and reflecting	Key activities in the unit of work are: • investigating and designing Anderson shelters • planning the shelter • making a shelter • evaluating their and others shelters considering effective and ineffective designs	When assessed, pupils will demonstrate the following sticky knowledge: • identify features of a shelter • show an understanding of shell structures • understand how to strengthen, stiffen and reinforce corrugated cardboard together. Technical Vocabulary: • Corrugated cardboard • layers • Strong • Reinforce • Stiffen • glue • Strength • Secure • Measure • Cut • Shape • join
Light-Up Signs (Electrical Systems/ Digital World)	Pupils will learn: • to identify the features and purposes of light-up signs • to analyse how illuminated signs work • how LEDs may be used instead of traditional incandescent bulbs in series circuits. • to strengthen and reinforce 3D framework • to plan and design • to assess design specification • to apply a design to making a product • to evaluate and modify the product	Key activities in the unit of work are: • making the 3D frame structure of the box and painting it • designing/ decorating the front cover of the box and cladding the sides • making a circuit for a spot light and fit it in the box • evaluating their and others lightbox	When assessed, pupils will demonstrate the following sticky knowledge: • identify the features of a light-up sign • show an understanding of freestanding frame structures and distinguish between frame and shell structure • identify components of the electric circuit • know how to be safe when sawing Technical Vocabulary: • Frame structure

	• to assess and evaluate work Pupils will be given the opportunity to develop the following skills: • draw and design • plan and make • build freestanding frame structures • using the correct technique to saw safetly • create a circuit with LED lights • painting and decorating the light-up box • assess and evaluate		• Strengthen • reinforce • Electric circuit • Battery • Crocodile clips • LED • Light bulb • switch
Year 5 Viking Longship (Structure)	Pupils will learn: • to identify the features and purpose of a Viking longship • to create an exploded diagram • to build a prototype • to create a strong structure of the longship • to build the longship Pupils will be given the opportunity to develop the following skills: • investigate and design • drawing and annotating • join materials with card triangles to reinforce structure • use a hacksaw and bench hook to cut wood accurately to 1mm • use the correct techniques to saw safety • use sandpaper to ensure a smooth finish • making the Viking longship • evaluating and reflecting	Key activities in the unit of work are: • investigating and designing a Viking longboat • making a prototype • making the Viking longboat • evaluating their and others longboat suggesting improvements	When assessed, pupils will demonstrate the following sticky knowledge: • identify features and purpose of a longboat • identify stronger and weaker structures • show an understanding of how triangulation can be used to reinforce structures Technical Vocabulary: • Strengthen • joint • Weak • Stability • Reinforcement • 'L' joint • 'T' joint • '+' joint • Triangulation • Card triangles
Fairtrade T-shirt (Textile)	Pupils will learn: • Work to a specific design specification (Fairtrade theme – sustainable fashion) • to annotate designs • to stitch • technical vocabulary	Key activities in the unit of work are: • investigate and design a garment • learn/practice different stitches • decorate the T-shirt using applique and different stitches. • evaluate T-shirt continually as it is created	When assessed, pupils will demonstrate the following sticky knowledge: • an understanding of sustainable fashion • identify different stitch types for decoration

	Pupils will be given the opportunity to develop the following skills: • evaluate garment and their audience/purpose • design a garment • safety skills when using tools • measuring, marking and cutting fabric accurately and independently • sew backstitch, blanket, small, neat stitch for decoration • decorate garment using applique to attach pieces of fabric for decoration • tying strong knots • evaluate final product		• an understanding of topic vocabulary (applique, blanket stitch, etc) Technical vocabulary: • Applique • Running stitch • Backstitch • Blanket stitch • Decoration • Sustainable fashion
Moving Planets (Cam Mechanisms)	Pupils will learn: • how simple cam mechanisms work, what cams and followers are • how rotary motion is converted into linear motion in a mechanical system • to make a mechanism and change the shape of the cam to see how this changes the movement of the follower • to develop design criteria to inform their design • to build a framework using a wider range of tools and equipment • to understand and use a mechanical system • evaluate their design and final product Pupils will be given the opportunity to develop the following skills: • identify cams and followers on mechanisms • select materials according to their functional properties	Key activities in the unit of work are: • Investigate toys with moving cam mechanisms – investigate different types of cam mechanisms • investigate ways of strengthening structures for moving planets • design moving planets with a cam mechanism • follow a design to create moving planets with a cam mechanism • evaluate a finished moving toy	When assessed, pupils will demonstrate the following sticky knowledge: • understand that a cam mechanism will change rotary motion into linear motion • describe how cams work using appropriate vocabulary • identify ways of strengthening a structure Technical vocabulary: • Mechanism • Cam • Linkage • System • Follower • Rotary • movement • linear • dowel • rotate • lift

	• accurately measure and cut the dowel wood for use as the axle/shaft for the cams to turn on. • make a handle to work the mechanical system for my automata planet • make adjustments to the mechanical system to make it run well • use the design criteria to inform evaluation		
Year 6 Fairground (Structure/ Mechanical/ Electrical Systems)	Pupils will learn: • to identify the moving parts of a rotating ride/object • how a ride is powered and built • different types of motion • how a circuit with a motor can be used to create rotating parts • create a detailed diagram of their chosen ride • follow a design to create a fairground ride with rotating parts Pupils will be given the opportunity to develop the following skills: • applying prior knowledge of circuits • drawing and designing • manipulate pulleys to create different movements • design an appropriate electrical circuit for the ride. • measuring and cutting • gluing materials • finding ways to strengthen and reinforce structures • work accurately and safely with a variety of tools, materials and electrical components • evaluate their fairground	Key activities in the unit of work are: • looking at a range of existing fairground rides and investigating how they move • investigating different pulleys and ways of using electrical motors to create rotating parts. • designing a fairground ride with a rotating part. • making a fairground ride following a design. • evaluate the fairground	When assessed, pupils will demonstrate the following sticky knowledge: • identify different types of motion • understand how pulley and belt systems are used to transfer movement • understand how an electrical circuit with a motor can be used to create rotating parts • understand that mechanical and electrical components work as a system with an input, process and output. Technical Vocabulary: • Motor • Toggle switch • Drive belt • Pulley • Shaft • Bearing • Series circuit • Short circuit
Programming Pioneers	Pupils will learn:	Key activities in the unit of work are: • investigate computer programmes and famous computer scientists	When assessed, pupils will demonstrate the following sticky knowledge:

| (Digital World) | • how computers and computer programs are used in a variety of products
• about computer scientist that have helped shape the world
• to develop prototypes of a computer-controlled electrical system
• to follow a circuit diagram
• to write programs to monitor and control products

Pupils will be given the opportunity to develop the following skills:
• create and run a computer program
• incorporate electrical systems in their product design
• follow a circuit diagram to wire up a more complex circuit
• program their motor to change its rotational speed and direction.
• design, write and debug programs controlling physical systems
• solve problems by decomposing them into smaller parts
• use sequence and repetition in programs | • design innovative, functional, appealing products and creating a design brief
• writing a program to monitor and control products
• evaluating their design for a computer-controlled system and consider the views of others to improve their work. | • understanding of computing to program, monitor and control products
• identify some of the computer scientists

Technical Vocabulary:

• electrical system
• monitor
• control
• program
• electronic
• components
• computers
• debug
• software
• hardware
• algorithm |