



Progression Map – Design Technology

<p>Penguins EYFS</p>	<p>Design</p> <ul style="list-style-type: none">• make verbal plans and material choices• explore materials to inform design <p>Make</p> <ul style="list-style-type: none">• improve fine motor skills with a variety of materials• join materials in a variety of ways• describe how they are putting pieces together <p>Evaluate</p> <ul style="list-style-type: none">• give verbal evaluation of their own model• check to see if their model matches their plan• consider what they would do differently next time• describe their favourite and least favourite part of their model <p>Technical knowledge</p> <ul style="list-style-type: none">• know there are a range of different materials• make simple suggestions of how to solve problems when making
	<p>Textiles – weaving</p> <p>Design</p> <ul style="list-style-type: none">• plan simple designs <p>Make</p> <ul style="list-style-type: none">• use weaving tool to follow a design <p>Evaluate</p> <ul style="list-style-type: none">• consider what they would do differently next time <p>Technical knowledge</p> <ul style="list-style-type: none">• know that thread goes over and under when weaving

	<p>Cooking and nutrition – Animal themed café</p> <p>Design</p> <ul style="list-style-type: none"> • design a simple menu <p>Make</p> <ul style="list-style-type: none"> • follow hygiene rules when preparing food (hand washing) <p>Evaluate</p> <ul style="list-style-type: none"> • consider what went well and what they would do differently next time <p>Technical knowledge</p> <ul style="list-style-type: none"> • know a menu is a list of food or drink
<p>Turtles Year 1</p>	<p>Structures – Constructing a Windmill</p> <p>Design</p> <ul style="list-style-type: none"> • explain importance of a clear design criteria • include individual preferences and requirements in a design <p>Make</p> <ul style="list-style-type: none"> • make stable structures from card, tape and glue • turn 2D nets into 3D structures • follow instructions to cut and assemble the supporting structure • make functioning turbines and axles which are assembled into a main supporting structure <p>Evaluate</p> <ul style="list-style-type: none"> • evaluate a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't • suggest points for improvements <p>Technical knowledge</p> <ul style="list-style-type: none"> • understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses) • understand that axles are used in structures and mechanisms to make parts turn in a circle • begin to understand that different structures are used for different purposes • know that a structure is something that has been made and put together

Textiles - Puppets

Design

- use a template to create a design for a puppet

Make

- cut fabric neatly with scissors
- use joining methods to decorate a puppet
- sequence steps for construction

Evaluate

- reflect on a finished product, explaining likes and dislikes

Technical knowledge

- know that 'joining technique' means connecting two pieces of material together
- know that there are various temporary methods of joining fabric by using staples, glue or pins
- understand that different techniques for joining materials can be used for different purposes
- understand that a template (or fabric pattern) is used to cut out the same shape multiple times
- know that drawing a design idea is useful to see how an idea will look.

Cooking and nutrition – Fruit and Vegetables

Design

- design packaging by-hand or on ICT software

Make

- chop fruit and vegetables safely
- identify if a food is a fruit or a vegetable
- know where and how fruits and vegetables grow

Evaluate

- taste and evaluate different food combinations
- describe appearance, smell and taste
- suggest information to be included on packaging

Technical knowledge

- understand the difference between fruits and vegetables
- understand that some foods typically known as vegetables are actually fruits (e.g. cucumber)

	<ul style="list-style-type: none"> • know that a blender is a machine which mixes ingredients together into a smooth liquid • know that a fruit has seeds and a vegetable does not • know that fruits grow on trees or vines • know that vegetables can grow either above or below ground • know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber)
<p>Dolphins Year 2</p>	<p>Structures – Baby Bear’s Chair</p> <p>Design</p> <ul style="list-style-type: none"> • generate and communicate ideas using sketching and modelling • learn about different types of structures, found in the natural world and in everyday objects <p>Make</p> <ul style="list-style-type: none"> • make a structure according to design criteria • create joints and structures from paper/card and tape • build a strong and stiff structure by folding paper <p>Evaluate</p> <ul style="list-style-type: none"> • explore the features of structures • compare the stability of different shapes • test the strength of own structures • identify the weakest part of a structure • evaluate the strength, stiffness and stability of own structure <p>Technical knowledge</p> <ul style="list-style-type: none"> • know that shapes and structures with wide, flat bases or legs are the most stable • understand that the shape of a structure affects its strength • know that materials can be manipulated to improve strength and stiffness • know that a structure is something which has been formed or made from parts • know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move • know that a ‘strong’ structure is one which does not break easily • know that a ‘stiff’ structure or material is one which does not bend easily • know that natural structures are those found in nature • know that man-made structures are those made by people

Textiles - Pouches

Design

- design a pouch

Make

- select and cut fabrics for sewing
- decorate using fabric glue or running stitch
- thread a needle
- sew running stitch, with evenly spaced, neat, even stitches to join fabric
- neatly pin and cut fabric using a template

Evaluate

- troubleshoot scenarios posed by teacher
- discuss as a class, the success against the success criteria
- identify aspects of their peers' work that they particularly like and why

Technical knowledge

- know that different materials have different properties and are therefore suitable for different uses
- know that it is important to test my design as I go along so that I can solve any problems that may occur
- know that sewing is a method of joining fabric
- know that different stitches can be used when sewing
- understand the importance of tying a knot after sewing the final stitch
- know that a thimble can be used to protect my fingers when sewing

Mechanisms/mechanical systems – Fairground Wheel

Design

- select a suitable linkage system to produce the desired motions

Make

- select materials according to their characteristics
- follow a design brief

Evaluate

- evaluate different designs
- test and adapt a design

	<p>Technical knowledge</p> <ul style="list-style-type: none"> • know that different materials have different properties and are therefore suitable for different uses • know that it is important to test my design as I go along so that I can solve any problems that may occur
<p>Seahorses Year 3/4</p>	<p>Structures - Pavilions</p> <p>Design</p> <ul style="list-style-type: none"> • design a stable structure that is aesthetically pleasing • select materials to create a desired effect • build frame structures designed to support weight <p>Make</p> <ul style="list-style-type: none"> • create a range of different shaped frame structures • make a variety of free standing frame structures of different shapes and sizes • select appropriate materials to build a strong structure and for the cladding • reinforce corners to strengthen a structure • create a design in accordance with a plan • learn to create different textural effects with materials <p>Evaluate</p> <ul style="list-style-type: none"> • describe what characteristics of a design and construction made it the most effective • consider effective and ineffective designs <p>Technical knowledge</p> <ul style="list-style-type: none"> • understand what a frame structure is • know that a 'free-standing' structure is one which can stand on its own • know that cladding can be applied to structures for different effects • know that aesthetics are how a product looks • know that a product's function means its purpose • understand that the target audience means the person or group of people a product is designed for • know that architects consider light, shadow and patterns when designing

Textiles - Cushions

Design

- design and make a template from an existing textile product and applying individual design criteria

Make

- select and cut fabrics with ease using fabric scissors
- thread needles with greater independence
- tie knots with greater independence
- sew cross stitch to join fabric
- decorate fabric using appliqué
- complete design ideas with stuffing and sewing the edges

Evaluate

- Evaluating an end product and thinking of other ways in which to create similar items

Technical knowledge

- know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric
- know that when two edges of fabric have been joined together it is called a seam
- know that it is important to leave space on the fabric for the seam

Mechanisms/mechanical systems – Pneumatic Toys

Design

- design a toy which uses a pneumatic system
- develop design criteria from a design brief
- generate ideas using thumbnail sketches and exploded diagrams
- learn that different types of drawings are used in design to explain ideas clearly

Make

- create a pneumatic system to create a desired motion
- build secure housing for a pneumatic system
- use syringes and balloons to create different types of pneumatic systems
- select materials due to their functional and aesthetic characteristics
- manipulate materials to create different effects by cutting, creasing, folding, weaving

Evaluate

- use the views of others to improve designs
- test and modify the outcome, suggesting improvements
- understand the purpose of exploded-diagrams through the eyes of a designer and their client

Technical knowledge

- know that pneumatic systems operate by drawing in, releasing and compressing air
- understand how sketches, drawings and diagrams can be used to communicate design ideas
- know that exploded-diagrams are used to show how different parts of a product fit

Cooking and Nutrition – Eating Seasonally**Design**

- create a healthy and nutritious recipe considering the taste, texture, smell and appearance of the dish

Make

- know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination
- follow the instructions within a recipe

Evaluate

- establish and use design criteria to help test and review dishes
- describe the benefits of seasonal fruits and vegetables and the impact on the environment
- suggest points for improvement when making a dish

Technical knowledge

- know that not all fruits and vegetables can be grown in the UK
- know that climate affects food growth
- know that vegetables and fruit grow in certain seasons
- know that cooking instructions are known as a 'recipe'
- know safety rules for using, storing and cleaning a knife safely

Electrical systems - Torches

Design

- design giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas

Make

- make a torch with a working electrical circuit and switch
- use appropriate equipment to cut and attach materials
- assemble a torch according to the design and success criteria

Evaluate

- evaluating electrical products
- test and evaluating the success of a final product

Technical knowledge

- understand that electrical conductors are materials which electricity can pass through
- understand that electrical insulators are materials which electricity cannot pass through
- know that a battery contains stored electricity that can be used to power products
- know that an electrical circuit must be complete for electricity to flow
- know that a switch can be used to complete and break an electrical circuit

Digital world – Electronic Charm

Design

- problem solve by suggesting potential features on a Micro: bit and justifying ideas
- draw and manipulate 2D shapes, using computer-aided design

Make

- use a template when cutting and assembling the pouch
- follow a list of design requirements
- write a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm

Evaluate

- describe what characteristics of a design and construction made it the most effective
- consider effective and ineffective designs
- use the views of others to improve designs

	<p>Technical knowledge</p> <ul style="list-style-type: none"> • understand that in programming a 'loop' is code that repeats something again and again until stopped • know that a Micro:bit is a pocket-sized, codeable computer • know that in design and technology the term 'smart' means a programmed product • know the difference between analogue and digital technologies • know that CAD stands for Computer-aided design
<p>Sharks Year 5/6</p>	<p>Structures – Buildings</p> <p>Design</p> <ul style="list-style-type: none"> • design a stable structure that is able to support weight • create frame structure with focus on triangulation <p>Make</p> <ul style="list-style-type: none"> • use triangles to enable to structure to support a greater load • measure and mark wood accurately • select appropriate tools and equipment for particular tasks • use the correct techniques to saws safely • identify where a structure needs reinforcement and using card corners for support • understand that selecting appropriating materials is an important part of the design process <p>Evaluate</p> <ul style="list-style-type: none"> • adapt and improve a structure by identifying points of weakness and reinforcing them as necessary • evaluate the work of others and receive feedback on own work • suggest areas for improvement • analyse existing products <p>Technical knowledge</p> <ul style="list-style-type: none"> • understand some different ways to reinforce structures • understand how triangles can be used to reinforce buildings • know that properties are words that describe the form and function of materials • understand why material selection is important based on their properties

Textiles – Stuffed Toy

Design

- consider the main component shapes required and creating an appropriate template
- consider the proportions of individual components
- understand purpose of products (toys), including what is meant by ‘fit for purpose’ and ‘form over function’

Make

- measure, mark and cut fabric accurately and independently
- create strong and secure blanket stitches when joining fabric
- thread needles independently
- explain material choices and why they were chosen as part of a product concept

Evaluate

- test and evaluate an end product and giving point for further improvements

Technical knowledge

- know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric
- understand that it is easier to finish simpler designs to a high standard
- know that soft toys are often made by creating appendages separately and then attaching them to the main body
- know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely

Mechanisms/mechanical systems – Making a Pop-Up Book

Design

- design a pop-up book which uses a mixture of structures and mechanisms
- name each mechanism, input and output accurately
- storyboard ideas for a book

Make

- follow a design brief to make a pop-up book, neatly and with focus on accuracy
- make mechanisms and/or structures using sliders, pivots and folds to produce movement
- use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result

Evaluate

- evaluate the work of others and receive feedback on own work

- suggest points for further improvements

Technical knowledge

- know that mechanisms control movement
- understand that mechanisms can be used to change one kind of motion into another
- understand how to use sliders, pivots and folds to create paper-based mechanisms

Cooking and nutrition – Come Dine with Me

Design

- write a recipe, explaining the key steps, method and ingredients

Make

- follow a recipe, including using the correct quantities of each ingredient
- adapt a recipe based on research work to a given timescale
- work safely and hygienically with independence

Evaluate

- evaluate a recipe, considering: taste, smell, texture and origin of the food group
- evaluate health and safety in production to minimise cross contamination

Technical knowledge

- know that 'processed food' means food that has been put through multiple changes in a factory
- understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides
- understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)

Electrical systems – Steady Hand Game

Design

- generate ideas through sketching and discussion
- model ideas through prototypes
- understand purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'

Make

- construct a stable base for a game
- accurately cut, fold and assemble a net
- make and test a circuit
- incorporate a circuit into a base

Evaluate

- test own and others finished games, identifying what went well and making suggestions for improvement
- gather images and information about existing children's toys
- analyse a selection of existing children's toys

Technical knowledge

- know that batteries contain acid, which can be dangerous if they leak
- know the names of the components in a basic series circuit, including a buzzer
- know that 'form' means the shape and appearance of an object
- know the difference between 'form' and 'function'
- understand that 'fit for purpose' means that a product works how it should and is easy to use
- know that form over purpose means that a product looks good but does not work very well

Digital world – Navigating the world

Design

- write a design brief from information submitted by a client
- develop design criteria to fulfil the client's request
- develop a product idea through annotated sketches
- place and manoeuvre 3D objects, using CAD
- change the properties of, or combine one or more 3D objects, using CAD

Make

- consider materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)
- explain material choices and why they were chosen as part of a product concept
- programme an N, E, S, W cardinal compass

Evaluate

- explain how my program fits the design criteria and how it would be useful as part of a navigation tool
- develop an awareness of sustainable design
- describe how the product concept fits the client's request and how it will benefit the customers
- explain how my program fits the design criteria

Technical knowledge

- know that accelerometers can detect movement
- understand that sensors can be useful in products as they mean the product can function without human input
- know that designers write design briefs and develop design criteria to enable them to fulfil a client's request
- know that 'multifunctional' means an object or product has more than one function