

D & T Progression Map



| D & T Progression Map Year A  *Structures* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | EYFS |  | Key Stage 1  *By the end of Year 2, children will be taught to:* |
| Junk Modelling | Design:  • Making verbal plans and material choices.  • Developing a junk model.  Make:  • Improving fine motor/scissor skills with a variety of materials.  • Joining materials in a variety of ways (temporary and permanent).  • Joining different materials together.  • Describing their junk model, and how they intend to put it together.  Evaluate:  • Giving a verbal evaluation of their own and others’ junk models with adult support.  • Checking to see if their model matches their plan.  • Considering what they would do differently if they were to do it again.  • Describing their favourite and least favourite part of their model. | Make a Windmill | Design:  • Learning the importance of a clear design criteria.  • Including individual preferences and requirements in a design  Make:  • Making stable structures from card, tape and glue.  • Learning how to turn 2D nets into 3D structures.  • Following instructions to cut and assemble the supporting structure of a windmill.  • Making functioning turbines and axles which are assembled into a main supporting structure. |
| Knowledge | | | |
| Junk Modelling | Technical:  • To know there are a range to different materials that can be used to make a model and that they are all slightly different.  • Making simple suggestions to fix their junk model. | Make a Windmill | Technical:  • To understand that the shape of materials can be changed to improve the strength and stiffness of structures.  • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses).  • To understand that axles are used in structures and mechanisms to make parts turn in a circle.  • To begin to understand that different structures are used for different purposes.  • To know that a structure is something that has been made and put together.  Additional:  • To know that a client is the person I am designing for.  • To know that design criteria is a list of points to ensure the product meets the clients needs and wants.  • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity.  • To know that windmill turbines use wind to turn and make the machines inside work.  • To know that a windmill is a structure with sails that are moved by the wind.  • To know the three main parts of a windmill are the turbine, axle and structure. |

| D & T Progression Map Year B  *Structures* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | EYFS |  | Key Stage 1  *By the end of Year 2, children will be taught to:* |
| Boats | Design:  • Designing a junk model boat.  • Using knowledge from exploration to inform design.  Make:  • Making a boat that floats and is waterproof, considering material choices.  Evaluate:  • Making predictions about, and evaluating different materials to see if they are waterproof.  • Making predictions about, and evaluating existing boats to see which floats best.  • Testing their design and reflecting on what could have been done differently.  • Investigating the how the shapes and structure of a boat affect the way it moves. | Baby Bear’s Chair | Design:  • Generating and communicating ideas using sketching and modelling.  Make:  • Making a structure according to design criteria.  • Creating joints and structures from paper/card and tape.  • Building a strong and stiff structure by folding paper.  Evaluate:  • Testing the strength of own structure.  • Identifying the weakest part of a structure.  • Evaluating the strength, stiffness and stability of own structure. |
| Knowledge | | | |
| Boats | Technical:  • To know that ‘waterproof’ materials are those which do not absorb water.  Additional:  • To know that some objects float and others sink.  • To know the different parts of a boat. | Baby Bear’s Chair | Technical:  • To know that materials can be manipulated to improve strength and stiffness.  • To know that a structure is something which has been formed or made from parts.  • To know that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move.  • To know that a ‘strong’ structure is one which does not break easily.  • To know that a ‘stiff’ structure or material is one which does not bend easily. |

| D & T Progression Map Year A  *Structures* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Lower Key Stage 2  *By the end of Year 4, children will be taught to:* |  | Upper Key Stage 2  *By the end of Year 6, children will be taught to:* |
| Constructing a Pavilion | Design:  • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.  • Building frame structures designed to support weight.  Make:  • Creating a range of different shaped frame structures.  • Making a variety of free standing frame structures of different shapes and sizes.  • Selecting appropriate materials to build a strong structure and cladding. • Reinforcing corners to strengthen a structure.  • Creating a design in accordance with a plan.  • Learning to create different textural effects with materials.  Evaluate:  • Evaluating structures made by the class.  • Describing what characteristics of a design and construction made it the most effective.  • Considering effective and ineffective designs. | Bridges | Design:  • Designing a stable structure that is able to support weight.  • Creating a frame structure with a focus on triangulation.  Make:  • Making a range of different shaped beam bridges.  • Using triangles to create truss bridges that span a given distance and support a load.  • Building a wooden bridge structure.  • Independently measuring and marking wood accurately.  • Selecting appropriate tools and equipment for particular tasks.  • Using the correct techniques to saws safely.  • Identifying where a structure needs reinforcement and using card corners for support.  • Explaining why selecting appropriating materials is an important part of the design process.  • Understanding basic wood functional properties.  Evaluate:  • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.  • Suggesting points for improvements for own bridges and those designed by others. |
| Knowledge | | | |
| Constructing a Pavilion | Technical:  • To understand what a frame structure is.  • To know that a ‘free-standing’ structure is one which can stand on its own  Additional:  • To know that a pavilion is a decorative building or structure for leisure activities.  • To know that cladding can be applied to structures for different effects.  • To know that aesthetics are how a product looks.  • To know that a product’s function means its purpose.  • To understand that the target audience means the person or group of people a product is designed for.  • To know that architects consider light, shadow and patterns when designing. | Bridges | Technical:  • To understand some different ways to reinforce structures.  • To understand how triangles can be used to reinforce bridges.  • To know that properties are words that describe the form and function of materials.  • To understand why material selection is important based on properties.  • To understand the material (functional and aesthetic) properties of wood.  Additional:  • To understand the difference between arch, beam, truss and suspension bridges.  • To understand how to carry and use a saw safely. |
| D & T Progression Map Year A  *Mechanisms/Mechanical Systems* | | | |
| Skills | | | |
|  | EYFS |  | Key Stage 1  *By the end of Year 2, children will be taught to:* |
| Junk Modelling | Design:  • Making verbal plans and material choices.  • Developing a junk model.  Make:  • Improving fine motor/scissor skills with a variety of materials.  • Joining materials in a variety of ways (temporary and permanent).  • Joining different materials together.  • Describing their junk model, and how they intend to put it together.  Evaluate:  • Giving a verbal evaluation of their own and others’ junk models with adult support.  • Checking to see if their model matches their plan.  • Considering what they would do differently if they were to do it again.  • Describing their favourite and least favourite part of their model. | Making a Moving Storybook | Design:  • Explaining how to adapt mechanisms, using bridges or guides to control the movement.  • Designing a moving story book for a given audience.  Make:  • Following a design to create moving models that use levers and sliders.  Evaluate:  • Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed.  • Reviewing the success of a product by testing it with its intended audience. |
| Knowledge | | | |
| Junk Modelling | Technical:  • To know there are a range to different materials that can be used to make a model and that they are all slightly different.  • Making simple suggestions to fix their junk model. | Making a Moving Storybook | Technical:  • To know that a mechanism is the parts of an object that move together.  •To know that a slider mechanism moves an object from side to side.  • To know that a slider mechanism has a slider, slots , guides and an object.  • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider.  Additional:  • To know that in Design and technology we call a plan a ‘design’. |

| D & T Progression Map Year B  *Mechanisms/Mechanical Systems* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | EYFS |  | Key Stage 1  *By the end of Year 2, children will be taught to:* |
| Boats | Design:  • Designing a junk model boat.  • Using knowledge from exploration to inform design.  Make:  • Making a boat that floats and is waterproof, considering material choices.  Evaluate:  • Making predictions about, and evaluating different materials to see if they are waterproof.  • Making predictions about, and evaluating existing boats to see which floats best.  • Testing their design and reflecting on what could have been done differently.  • Investigating the how the shapes and structure of a boat affect the way it moves. | Making a Moving Monster | Design:  • Creating a class design criteria for a moving monster.  • Designing a moving monster for a specific audience in accordance with a design criteria.  Make:  • Making linkages using card for levers and split pins for pivots.  • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used.  • Cutting and assembling components neatly.  Evaluate:  • Evaluating own designs against design criteria.  • Using peer feedback to modify a final design. |
| Knowledge | | | |
| Boats | Technical:  • To know that ‘waterproof’ materials are those which do not absorb water.  Additional:  • To know that some objects float and others sink.  • To know the different parts of a boat. | Making a Moving Monster | Technical:  • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement.  • To know that there is always an input and output in a mechanism.  • To know that an input is the energy that is used to start something working.  • To know that an output is the movement that happens as a result of the input.  • 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.  Additional:  • To know some real-life objects that contain mechanisms. |

| D & T Progression Map Year A  *Mechanisms/Mechanical Systems* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Lower Key Stage 2  *By the end of Year 4, children will be taught to:* |  | Upper Key Stage 2  *By the end of Year 6, children will be taught to:* |
| Making a slingshot car | Design:  • Designing a shape that reduces air resistance.  • Drawing a net to create a structure from.  • Choosing shapes that increase or decrease speed as a result of air resistance.  • Personalising a design.  Make:  • Measuring, marking, cutting and assembling with increasing accuracy.  • Making a model based on a chosen design.  Evaluate:  • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance. | Automata toys | Design:  •Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement.  • Understanding how linkages change the direction of a force.  • Making things move at the same time.  • Understanding and drawing cross-sectional diagrams to show the inner-workings of my design.  Make:  • Measuring, marking and checking the accuracy of the jelutong and dowel pieces required.  • Measuring, marking and cutting components accurately using a ruler and scissors.  • Assembling components accurately to make a stable frame.  • Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles.  • Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set.  Evaluate:  • Evaluating the work of others and receiving feedback on own work.  • Applying points of improvement to their toys.  • Describing changes they would make/do if they were to do the project again. |
| Knowledge | | | |
| Making a slingshot car | Technical:  • To know that air resistance is the level of drag on an object as it is forced through the air.  • To understand that the shape of a moving object will affect how it moves due to air resistance.  Additional:  • To know that aesthetics means how an object or product looks in design and technology.  • To know that a template is a stencil you can use to help you draw the same shape accurately.  • To know that a birds-eye view means a view from a high angle (as if a bird in flight).  • To know that graphics are images which are designed to explain or advertise something.  •To know that it is important to assess and evaluate design ideas and models against a list of design criteria. | Automata toys | Technical:  • To understand that the mechanism in an automata uses a system of cams, axles and followers.  • To understand that different shaped cams produce different outputs.  Additional:  • To know that an automata is a hand powered mechanical toy.  • To know that a cross-sectional diagram shows the inner workings of a product.  • To understand how to use a bench hook and saw safely.  • To know that a set square can be used to help mark 90° angles. |

| D & T Progression Map Year B  *Electrical systems (KS2 only)* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Lower Key Stage 2  *By the end of Year 4, children will be taught to:* |  | Upper Key Stage 2  *By the end of Year 6, children will be taught to:* |
| Torches | Design:   * Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.   Make:  • Making a torch with a working electrical circuit and switch.  • Using appropriate equipment to cut and attach materials.  • Assembling a torch according to the design and success criteria.  Evaluate:  • Evaluating electrical products.  • Testing and evaluating the success of a final product. | Doodlers | Design:  • Identifying factors that could be changed on existing products and explaining how these would alter the form and function of the product.  • Developing design criteria based on findings from investigating existing products. • Developing design criteria that clarifies the target user.  Make:  • Altering a product’s form and function by tinkering with its configuration.  • Making a functional series circuit, incorporating a motor.  • Constructing a product with consideration for the design criteria.  Evaluate:  • Carry out a product analysis to look at the purpose of a product along with its strengths and weaknesses.  • Determining which parts of a product affect its function and which parts affect its form.  • Analysing whether changes in configuration positively or negatively affect an existing product. |
| Knowledge | | | |
| Torches | Technical:  • To know that an electrical circuit must be complete for electricity to flow. • To know that a switch can be used to complete and break an electrical circuit.  Additional:  • To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.  • To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison. | Doodlers | Technical:  • To know that series circuits only have one direction for the electricity to flow.  • To know when there is a break in a series circuit, all components turn off.  • To know that an electric motor converts electrical energy into rotational movement, causing the motor’s axle to spin.  • To know a motorised product is one which uses a motor to function.  Additional:  • To know that product analysis is critiquing the strengths and weaknesses of a product.  • To know that ‘configuration’ means how the parts of a product are arranged. |

| D & T Progression Map  *Cooking and nutrition* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Key Stage 1  *By the end of Year 2, children will be taught to:* | | |
| Fruit and Vegetables | Design:  • Designing smoothie carton packaging by-hand or on ICT software.  Make:  • Chopping fruit and vegetables safely to make a smoothie.  • Identifying if a food is a fruit or a vegetable.  • Learning where and how fruits and vegetables grow  Evaluate:  • Tasting and evaluating different food combinations.  • Describing appearance, smell and taste.  • Suggesting information to be included on packaging. | A balanced diet | Design:  • Designing a healthy wrap based on a food combination which works well together  Make:  • Slicing food safely using the bridge or claw grip.  • Constructing a wrap that meets a design brief.  Evaluate:  • Describing the taste, texture and smell of fruit and vegetables.  • Taste testing food combinations and final products.  • Describing the information that should be included on a label.  • Evaluating which grip was most effective. |
| Knowledge | | | |
| Fruit and Vegetables | • Understanding the difference between fruits and vegetables.  • To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber).  • To know that a blender is a machine which mixes ingredients together into a smooth liquid.  • To know that a fruit has seeds and a vegetable does not.  • To know that fruits grow on trees or vines.  • To know that vegetables can grow either above or below ground.  • To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). | A balanced diet | • To know that ‘diet’ means the food and drink that a person or animal usually eats.  • To understand what makes a balanced diet.  • To know where to find the nutritional information on packaging.  • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar.  • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group.  • To know that nutrients are substances in food that all living things need to make energy, grow and develop.  • To know that ‘ingredients’ means the items in a mixture or recipe.  • To know that I should only have a maximum of five teaspoons of sugar a day to stay healthy.  • To know that many food and drinks we do not expect to contain sugar do; we call these ‘hidden sugars’. |

| D & T Progression Map Year A  *Textiles* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | EYFS |  | Key Stage 1  *By the end of Year 2, children will be taught to:* |
| Bookmarks | Design:  • Discussing what a good design needs.  • Designing a simple pattern with paper.  • Designing a bookmark.  • Choosing from available materials.  Make:  • Developing fine motor/cutting skills with scissors.  • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials.  • Using a prepared needle and wool to practise threading.  Evaluate:  • Reflecting on a finished product and comparing to their design. | Puppets | Design:  • Using a template to create a design for a puppet.  Make:  • Cutting fabric neatly with scissors.  • Using joining methods to decorate a puppet.  • Sequencing steps for construction.  Evaluate:  • Reflecting on a finished product, explaining likes and dislikes. |
| Knowledge | | | |
| Bookmarks | • To know that a design is a way of planning our idea before we start.  • To know that threading is putting one material through an object. | Puppets | • To know that ‘joining technique’ means connecting two pieces of material together.  • To know that there are various temporary methods of joining fabric by using staples. glue or pins.  • To understand that different techniques for joining materials can be used for different purposes.  • To understand that a template (or fabric pattern) is used to cut out the same shape multiple times.  • To know that drawing a design idea is useful to see how an idea will look. |

| D & T Progression Map Year A  *Textiles* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Lower Key Stage 2  *By the end of Year 4, children will be taught to:* |  | Upper Key Stage 2  *By the end of Year 6, children will be taught to:* |
| Cushions | Design:  • Designing and making a template from an existing cushion and applying individual design criteria.  Make:  • Following design criteria to create a cushion or Egyptian collar.  • Selecting and cutting fabrics with ease using fabric scissors.  • Threading needles with greater independence.  • Tying knots with greater independence.  • Sewing cross stitch to join fabric.  • Decorating fabric using appliqué.  • Completing design ideas with stuffing and sewing the edges.  Evaluate:  • Evaluating an end product and thinking of other ways in which to create similar items. | Soft Toy | Design:  • Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.  • Considering the proportions of individual components.  Make:  • Creating a 3D stuffed toy from a 2D design.  • Measuring, marking and cutting fabric accurately and independently .  • Creating strong and secure blanket stitches when joining fabric.  • Threading needles independently.  • Using appliqué to attach pieces of fabric decoration.  • Sewing blanket stitch to join fabric.  • Applying blanket stitch so the spaces between the stitches are even and regular.  Evaluate:  • Testing and evaluating an end product and giving point for further improvements. |
| Knowledge | | | |
| Cushions | •To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.  •To know that when two edges of fabric have been joined together it is called a seam.  •To know that it is important to leave space on the fabric for the seam. •To understand that some products are turned inside out after sewing so the stitching is hidden. | Soft Toy | • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.  • To understand that it is easier to finish simpler designs to a high standard.  • To know that soft toys are often made by creating appendages separately and then attaching them to the main body.  • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely. |

| D & T Progression Map Year A - *Digital world (KS2 only)* | | | |
| --- | --- | --- | --- |
| Skills | | | |
|  | Lower Key Stage 2  *By the end of Year 4, children will be taught to:* |  | Upper Key Stage 2  *By the end of Year 6, children will be taught to:* |
| Mindful Moments | Design:  • Writing design criteria for a programmed timer (Micro:bit).  • Exploring different mindfulness strategies.  • Applying the results of my research to further inform my design criteria.  • Developing a prototype case for my mindful moment timer.  • Using and manipulating shapes and clipart by using computer-aided design (CAD), to produce a logo.  • Following a list of design requirements.  Make:  • Developing a prototype case for my mindful moment timer.  • Creating 3D structures using modelling materials.  • Programming a micro:bit in the Microsoft micro:bit editor, to time a set number of seconds/minutes upon button press.  Evaluate:  • Investigating and analysing a range of timers by identifying and comparing their advantages and disadvantages.  • Evaluating my Micro:bit program against points on my design criteria and amending them to include any changes I made.  • Documenting and evaluating my project.  • Understanding what a logo is and why they are important in the world of design and business.  • Testing my program for bugs (errors in the code).  • Finding and fixing the bugs (debug) in my code.  • Gathering feedback from the user to make suggested improvements to a product. | Navigating the World | Design:  • Writing a design brief from information submitted by a client.  • Developing design criteria to fulfil the client’s request.  • Considering and suggesting additional functions for my navigation tool.  • Developing a product idea through annotated sketches.  • Placing and manoeuvring 3D objects, using CAD.  • Changing the properties of, or combining one or more 3D objects, using CAD.  Make:  • Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).  • Explaining material choices and why they were chosen as part of a product concept.  • Programming an N,E, S, W cardinal compass.  Evaluate:  • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.  • Developing an awareness of sustainable design.  • Identifying key industries that utilise 3D CAD modelling and explaining why.  • Describing how the product concept fits the client’s request and how it will benefit the customers.  • Explaining the key functions in my program, including any additions.  • Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.  • Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.  • Demonstrating a functional program as part of a product concept pitch |
| Knowledge | | | |
| Mindful Moments | Technical:  • To understand what variables are in programming.  • To know some of the features of a Micro:bit.  • To know that an algorithm is a set of instructions to be followed by the computer.  • To know that it is important to check my code for errors (bugs).  • To know that a simulator can be used as a way of checking your code works before installing it onto an electronic device.  Additional:  •To understand the terms 'ergonomic' and 'aesthetic'.  •To know that a prototype is a 3D model made out of cheap materials, that allows us to test design ideas and make better decisions about size, shape and materials.  • To know that an exhibition is a way for companies to showcase products, meet potential new customers and gather feedback from users. | Navigating the World | Technical:  • To know that accelerometers can detect movement.  • To understand that sensors can be useful in products as they mean the product can function without human input.  Additional:  • To know that designers write design briefs and develop design criteria to enable them to fulfil a client’s request.  • To know that ‘multifunctional’ means an object or product has more than one function.  • To know that magnetometers are devices that measure the Earth’s magnetic field to determine which direction you are facing. |