Overdale Infant School: Elements of Design and Technology - Progression Map

Intent

- **To be designers and design items for a purpose.**
- **To make meaningful creations.**
- **To be confident in using a range of tools and techniques**
- **To use their imagination to design and create.**
- **To take risks when designing and making.**
- **To evaluate technology and develop a critical understanding of its daily life in the wider world.**

Development Matters		National Curriculum KS1
EAD 3-4 year olds • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Join different materials and explore different textures.	**EAD Reception** • Return to and build on their previous learning, refining ideas and developing their ability to represent them. • Create collaboratively, sharing ideas, resources and skills. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories.	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. 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

	Pre-school	Reception	Year 1	Year 2
Design	**Structures** **Junk Modelling** • Making verbal plans and material choices. • Developing a junk model.	**Structures** **Junk Modelling** • Making verbal plans and material choices. • Developing a junk model. **Boats** • Designing a junk model boat. • Using knowledge from exploration to inform design. **Textiles** **Bookmarks** • Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials.	**Structures** **Constructing a windmill** • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. **Mechanical Systems** **Moving storybook** • Explaining how to adapt mechanisms, using bridges or guides to control the movement. • Designing a moving story book for a given audience. **Wheels and axles** • Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. **Food** **Fruit and Vegetables** • Designing smoothie carton packaging by-hand or on ICT software. **Textiles** **Puppets** • Using a template to create a design for a puppet.	**Structures** **Baby bear's chair** • Generating and communicating ideas using sketching and modelling **Mechanical Systems** **Fairground wheel** • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. **Moving monster** • Creating a class design criterion for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criterion. **Food** **A balanced diet** • Designing a healthy wrap based on a food combination which works well together. **Textiles** **Pouches** • Designing a pouch.

Make	**Structures**
	Junk Modelling
	• Improving fine motor/scissor skills with a variety of materials.
	• Joining materials in a variety of ways (temporary and permanent).
	• Joining different materials together.
		Structures
		Junk Modelling
		• 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.
		Boats
		• Making a boat that floats and is waterproof, considering material choices.
		Textiles
		Bookmarks
		• 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 practice threading
			Structures
			Constructing a windmill
			• 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.
			Mechanical Systems
			Moving storybook
			• Following a design to create moving models that use levers and sliders.
			Wheels and axles
			• Adapting mechanisms, when:
			  • they do not work as they should.
			  • to fit their vehicle design.
			  • to improve how they work after testing their vehicle.
			Food
			Fruit and vegetables
			• 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.
			Textiles
			Puppets
			• Cutting fabric neatly with scissors.
			• Using joining methods to decorate a puppet.
			• Sequencing steps for construction.
				Structures
				Baby bear's chair
				• 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.
				Mechanical Systems
				Fairground wheel
				• Selecting materials according to their characteristics.
				• Following a design brief.
				Moving monster
				• 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
				Food
				A balanced diet
				• Slicing food safely using the bridge or claw grip.
				• Constructing a wrap that meets a design brief.
				Textiles
				Pouches
				• Selecting and cutting fabrics for sewing.
				• Decorating a pouch using fabric glue or running stitch.
				• Threading a needle.
				• Sewing running stitch, with evenly spaced, neat, even stitches to join fabric.
				• Neatly pinning and cutting fabric using a template.

Evaluate	N/A	**Structures** **Junk Modelling** • 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. **Boats** • 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 **Textiles** **Bookmarks** • Reflecting on a finished product and comparing to their design.	**Mechanical Systems** **Moving storybook** • 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. **Wheels and axles** • Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. **Food** **Fruit and vegetables** • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. **Textiles** **Puppets** • Reflecting on a finished product, explaining likes and dislikes.	**Structures** **Baby bear's chair** • Testing the strength of own structure. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. **Mechanical Systems** **Fairground wheel** • Evaluating different designs. • Testing and adapting a design **Moving monster** • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. **Food** **A balanced diet** • 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. **Textiles** **Pouches** • Troubleshooting scenarios posed by teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class, the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and why.

Technical	N/A	**Structures** **Junk Modelling** • 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. **Boats** • To know that 'waterproof' materials are those which do not absorb water. **Textiles** **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.	**Structures** **Constructing a windmill** • 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. **Mechanical Systems** **Moving storybook** • 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. **Wheels and axles** • To know that wheels need to be round to rotate and move. • To understand that for a wheel to move it must be attached to a rotating axle.	**Structures** **Baby bear's chair** • 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. **Mechanical Systems** **Fairground wheel** • To know that different materials have different properties and are therefore suitable for different uses. **Moving monster** • 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

			• To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced. **<u>Textiles</u>** **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.	**<u>Textiles</u>** **Pouches** • To know that sewing is a method of joining fabric. • To know that different stitches can be used when sewing. • To understand the importance of tying a knot after sewing the final stitch. • To know that a thimble can be used to protect my fingers when sewing.

Additional	N/A	**Structures** **Boats** • To know that some objects float and others sink. • To know the different parts of a boat.	**Structures** **Constructing a windmill** • 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 client's 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. **Mechanical Systems** **Moving storybook** • To know that in Design and technology we call a plan a 'design'. **Wheels and axles** • To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles.	**Mechanical Systems** **Fairground wheel** • To know the features of a ferris wheel include the wheel, frame, pods, a base an axle and an axle holder. • To know that it is important to test my design as I go along so that I can solve any problems that may occur. **Moving monster** • To know some real-life objects that contain mechanisms.

Cooking and nutrition		**Food** **Rainbow salad** • Begin to understand and name some fruit and vegetables • To understand some foods are healthy and unhealthy • To know what a salad is • To know what vegetables to put into a salad	**Food** **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).	**Food** **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'.