Progression of Knowledge and Skills Design Technology

Reception-Y2 taken from Kapow Design Technology and Art and Design (revised scheme) Progression of skills and knowledge - Combined. (Kapow Primary 2022)

Nursery addition for Clowne Infant and Nursery School.

Structures		Nursery	Reception	Reception	Year 1	Year 2
		Construction	**Junk modelling**	**Boats**	**Constructing a windmill**	**Baby Bears Chair**
Skills	***Design***	Begin to make verbal plans when using blocks and construction kits, when prompted/questioned by an adult.	Making verbal plans and material choices. Design and junk model.	Designing a junk model boat. Using knowledge from exploration to inform design.	Learning the importance of a clear design criteria. Including individual preferences and requirements in a design.	Generating and communicating ideas using sketching and modelling. Learning about different types of structures, found in the natural world and in everyday objects.
	Make	Use blocks and construction kits to build towers, enclosures and other small world items from their imagination.	Improve FMS/scissor skills using a variety of materials. Join materials in a variety of ways (temporary and permanent). Join different materials together. Describe their junk model, and how they intend to put it together.	Making a boat that floats and is waterproof, considering material choices.	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 axels which are assembled into a main supporting structure.	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	Talk to an adult about what they have built and identify what they like about it.	Giving a verbal evaluation of their own and others junk models with support. Checking to see if their model matches their plan. Considering what they would do differently if they did it again. Describing their favourite and least favourite part of their model.	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 how the shapes and structure of a boat affect the way it moves.	Evaluating 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.	Exploring the features of structures. Comparing the stability of different shapes. Testing the strength of own structures. Identifying the weakest part of a structure. Evaluating the strength, stiffness and stability of own structure.

Structures		Nursery	Reception	Reception	Year 1	Year 2
		Construction	**Junk modelling**	**Boats**	**Constructing a windmill**	**Baby Bears Chair**
Knowledge	***Technical***	To know that there are a range of construction kits we can use to build with in nursery. To know that when we build a tower with bricks that join such as Duplo, it is more stable than using blocks that don't join.	To know there are a range of 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.	To know that waterproof materials are those that do not absorb water.	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. (eg 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.	To know that structures with wide, flat bases or legs are the most stable. To understand that the shape of a structure affects its strength. To know that materials can be manipulated to improve strength and stiffness. To know that a structure is something that has been formed or made from parts. To know that a stable structure is one which is firmly fixed and is 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.
	Additional			To know that some objects float and others sink. To know the different parts of a boat.	The client is the person I am designing for. 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 of generating electricity. To know that the 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, axel and structure.	To know that natural structures are those found in nature. To know that man-made structures are those made by people.

Mechanisms		Nursery	Reception	Year 1	Year 2	Year 2
		Exploring wheels			**Fairground wheel**	**Making a moving monster**
Skills	***Design***	Begin to make verbal plans when using wheels in construction play, when prompted/questioned by an adult. Begin to make verbal plans about how they will make a wheeled object move – push, pull, turn.			Selecting a suitable linkage system to produce the desired motion. Designing a wheel.	Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria.
	Make	Use wheels in construction play to create their own wheeled vehicles.			Selecting materials according to their characteristics. Following a design brief.	Making linkages using card for levers and split pins for pivots. Experimenting with linkages adjusting the width, lengths and thickness of card used. Cutting and assembling components neatly.
	Evaluate	Talk to an adult about how they have used wheels in their constructions and what they like about it.			Evaluating different designs. Testing and adapting a design.	Evaluating own designs against deep criteria. Using peer feedback to modify final designs.
Knowledge	***Technical***	Knows that wheels turn. Knows that wheels are round.			To know that different materials have different properties and are therefore suitable for different uses.	To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. To know there is always input and output in a mechanism. To know that input is the energy used to start something working. To know that output is the movement that happens as a result of the input. TO know that a lever is something that turns into a pivot. To know that a linkage mechanism is made up of a series of levers.
	Additional				That the features of a ferris wheel include the wheel, frame, pods, a base, an axel and an axel 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.	To know some real-life objects that contain mechanisms.

Textiles		Nursery	Reception	Year 1	Year 2
			Bookmarks	**Puppets**	
Skills	***Design***		Discussing what a good design needs. Designing a simple pattern with paper. Designing a bookmark. Choosing from available materials	Using a template to create a design for a puppet.	
	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.	Cutting fabric neatly with scissors. Using joining methods to decorate a puppet. Sequencing the steps taken during construction.	
	Evaluate		Reflecting on a finished product and comparing to their design	Reflecting on a finished product, explaining likes and dislikes.	
Knowledge	***Technical***		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.	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	
	Additional				

Cooking and Nutrition		Nursery	Reception	Year 1	Year 2
		Exploring fruit (Healthy eating week)	**Fruit and vegetable snack bar (Healthy eating week)**	**Smoothies (Kapow)**	**A balanced diet (Healthy Eating week)**
Skills	***Design***	Begin to make verbal plans about which fruits they might like to try.	Make verbal plans about the fruits/vegetables they will eat.	Designing smoothie carton packaging by-hand.	Use what we know about food groups to design a healthy eating plate for a meal.
	Make	Use their fingers in a pincer movement to pick up small pieces of pre-cut fruit from a tray and place it into a bowl ready to eat.	Make a menu for the class fruit and vegetable snack bar. Peel fruits to help create a fruit and vegetable snack bar. Cut soft fruits to put on the fruit and vegetable snack bar.	Chopping fruit and vegetables safely to make a smoothie. Juicing fruits safely to make a smoothie	
	Evaluate	Identify which fruits they do or do not enjoy.	Talk about the fruits and vegetables that they eat, identifying which they liked or did not like. Identify which fruits were soft and which were crunchy.	Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. Comparing their own smoothie with someone else's.	
Knowledge	***Technical***	To know that we should wash our hands before touching. To know the names of orange, banana, apple, strawberry, lemon, blueberry, pear.	To knows that we should eat 5 portions of fruit or vegetables a day.	To know that a blender is a machine which mixes ingredients together into a smooth liquid. To know that a fruit has seeds. To know that fruits grow on trees or vines. To know that vegetables can grow either above or below ground. To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).	To know that there are 5 food groups made up of fruit and vegetables, starchy carbohydrates, proteins, dairy, oils and spreads. To know roughly how much of each food group I should eat each day.
	Additional				