Design and Technology Overview Cycle A

Upper KS2

The project	Skills	Knowledge	Why this? Why now?	Vocabulary
What impact has Marie Curie's work had on the world today?				
To create a cam toy Children will look at inventions we use and have used that contains cams before creating their own toy with a moving part aided by a cam chosen for a specific reason Focus – Understanding mechanical systems and how they work	- To be able to cut accurately - To be able to measure accurately - To be able to design and plan with specific details - To be able to finish and product with accuracy	- To know that Marie Curie had an idea that was then developed into a final design and continued to be developed and this is what happens with many designs and inventions - To know that cams are used in machinery and toys both in the past and now	- Previously children have looked at mechanisms with moving parts considering the factors needed to ensure certain parts remain stationary, and others move. Having previously been taught how to create a structure and join materials with triangles, children will be able to focus on the newly acquired skill of creating the mechanism with a cam selected for a desired purpose.	- Cam - Mechanism - Round - Eccentric - Drop
What was Adolf Hitler's impact on the world?				
To create a working Morse code machine Children will design a morse code machine using a simple circuit incorporating a switch. This will be fixed onto a template that the children will have designed and printed using the 3D printer Focus – the use of electrical systems within a product	- To plan with precision considering placement and size - To use tools and features available on design software - To create a working circuit - To use exploded diagrams	- To know the importance Morse Code played during the war - To know how to create a working circuit with a switch - To know how 3D printing can be used in industry	- In LKS2 children have explored circuits and in KS2 they have also been introduced to Tinkercad. They will now combine these skills having to plan carefully how the circuit will sit and attach to the base to create a compact device.	- Morse code - Software - Circuit - Switch - Device
How important was Rosa Parks in the battle for racial equality?				
To create a stuffed doll Children will design and make a stuffed doll wearing traditional dress from a chosen country or culture Focus – Selecting a range of materials for aesthetics and purposes *Joining materials	- To select and use appropriate stitches - To accurately create a pattern - To finish a product to a high quality	- To know that traditional dress is not always followed by all people at all times associated with that culture - To know different examples of traditional dress - To know that 'toys' can be used to educate	- From EYFS to KS2 children have learnt about people from different cultures and the traditions they have. In LKS2 they have learnt a variety of stitches and what is needed in order to make a textiles project. Here they will go through this process independently, designing their doll, creating their own pattern before selecting appropriate materials in order to accurately represent the traditional dress from a country or culture.	- Aesthetics - Traditional - Stitch - Applique - Stuff(ed) (ing)

Lower KS2

The Project	Skills	Knowledge	Why this? Why now?	Vocabulary
What was life like for ancient Mayans?				
To create a Mayan inspired 'textile piece' Children will use basic stitches, plastic needles and binka to create a small patterned piece reflecting patterns used by the ancient Mayans Focus – To complete a task accurately with aesthetic qualities	- To thread and needle and be able to 'tie off' - To perform a basic stitch of varying lengths - To create patterns with groups of stitches - To reflect traditional Mayan designs in the finished piece	-To know the appearance of a traditional Mayan design - To know that colours used within the designs were based around the dyes that could be made -To know that Ancient Mayan designs were built up from many simple lines and shapes	- In KS1 children have looked at possible ways to join and embellish materials. They will now practice basic stitches using plastic needles and binka, this will lay the foundations for later in KS2 where they will be expected to join materials using a variety of smaller more discrete stitches.	- Binka - Thread - Needle - Length - Tie off
What was life like for the Tudors?				
To create a vegetable pottage Children will create their own recipe for a vegetable pottage using seasonal vegetables and then follow this recipe to make their final product. Focus – To follow a range of necessary cooking techniques to create a final product	- To prepare a range of vegetables for cooking (peeling, slicing, chopping) - To be able to quick fry and boil - To adapt a recipe whilst cooking to create a desirable product	-To know that different vegetables have to be prepared and cooked in different ways -To know the nutritional values of different vegetables -To know the seasonality and origin of different vegetables	- In EYFS children have been given prepared ingredients in order to create soup and in KS1 have been told how to prepare certain fruit and vegetables to make fruit kebabs. They will now have to follow the whole process, creating their own recipes, considering how to prepare certain vegetables and then using equipment including hobs to cook their prepared meal.	- Pottage - Stewed - Adapt - Frying - Boiling
How did life change during the Victorian era?				
To create a Victorian fun fair model with working lights Children will create a stand-alone model of a chosen Victorian fairground feature incorporating working lights. Focus – to incorporate a pre-programmed circuit into a design	- To use 'Crumble' to programme a functional circuit - To design a circuit to achieve the desired effect - To create a piece in keeping with traditional design	-To know a selection of traditional fun fair games and activities -To know how a computer can be used to programme a device -To know the importance of design to attract potential customers	- In KS1 children have made free standing structures and in KS2 science children have explored electricity and circuits. They will now take these skills a step further, using Crumble they will be able to programme their bulb(s) to flash (for example) and will immerse this into their design.	- Crumble - Programme - Functional - Circuit - Incorporate

KS1

The Project	Skills	Knowledge	Why this? Why now?	Vocabulary
Why have buildings changed over time?				
To create a model of a building with a specific purpose Children will research various buildings and the features they have in order to be suitable for there purpose. They will then design and build their own model of a building with specific features Focus – construct taking into consideration the purpose	- To build a structure - To join materials together - To design with a specific brief in mind - To identify a buildings needs - To cut accurately	- To know that a buildings purpose is it taken into account when designing - To know key features found on buildings: Door Roof Windows - To know that before buildings are built they are carefully designed with all aspects being thought out	In EYFS children have learnt about a variety of buildings within our local area and have spent time 'junk modelling'. This also links to learning in KS1 where children look at buildings and the how the purpose of them can change the properties they may have. They will now explore this in more detail, understanding the importance of specific design features and considering how they can include these into their own designs with out compromising the structural integrity of their model.	- Building - Purpose - Construction - Model - Strength - features
Are humans the most powerful thing in the world?				
To create a weather station Children will design and create a station with moving parts (parts that spin and slide) to collect and show information about the weather Focus – to use mechanisms including sliders and spinners	- To cut accurately - To measure accurately - To select appropriate tools	- To know how weather stations are used - To know different types of mechanisms: Slider Spinners - To know where sliders and spinners are used in the 'real world'	In EYFS children have looked at things that move (inc.windmills) and using a given format and template have experimented creating their own. Children have explored how we can measure weather, and carried out investigations doing this. Now they will incorporate this as well as a sliding and spinning mechanism independently to show the weather on that day.	- Slider - Spinner - Weather station - Mechanism
Why do people make journeys?				
To create a moving vehicle Children will create a moving (wheeled) vehicle fit for a desired purpose of the child's choice. Focus – to use axles	- To cut accurately - To select appropriate resources - To research existing products - To draw a design with labels - To join components of a design together	- To know what the purpose of an axle is - To know why one wheel can differ from another - To know why wheels are round - To know examples of vehicle designs and why they look and operate in the way they do.	In EYFS children have created moving vehicles using construction equipment, they will now take this knowledge and explore different ways of making axles and wheels before selecting the best method and incorporating it into their own vehicle. In KS1 they have joined flat materials together, they will have to consider how to join different components together also.	- Axles - Wheels - Moving - Connect - Joining

Design and Technology Overview Cycle B

Upper KS2

The project	Skills	Knowledge	Why this? Why now?	Vocabulary
What was the impact of the Viking Invasion on Britain?				
Baking traditional bread Children will bake their own bread on an open fire in preparation for a Saxon feast. Focus - preparation and creating using a specific technique	• To follow and adapt a recipe • To use correct methods (kneading) • To measure ingredients accurately • To select appropriate ingredients to match given brief	• To know the ingredients that were available in Britain during this time • To know the effect different ingredients (such as yeast and different types of flour) have on a product • To know different methods of baking (oven, open fire)	In KS1 children have learnt how to cut and prepare basic fruit and vegetables, before moving to LKS2 where they had to prepare ingredients to then cook, considering carefully the ingredients and their availability. They will now have to apply this knowledge, and consider how adapting a given recipe will effect the final product, whilst using traditional methods and considering the ingredients and authenticity to this period in time.	- Kneading - Rising - Baking - Adaptations
How has North America changed as result of British Colonisation?				
Flags of celebration Children will create their own flags taking inspiration from traditional North American designs to celebrate their own lives and successes. Focus – selecting appropriate methods and resources to finish a product accurately	• To complete a running stitch • To complete a back stitch • To select an appropriate stitch for a given purpose • To design with a given brief in mind	• To know the important of symbolism in different cultures • To know how flags have been used throughout history • To know examples of national flags and the reasons behind their designs	In KS1 children have had to select an appropriate material for a given purpose and joined 2 pieces of fabric together using a basic stitch or other joining techniques. In LKS2 using binka to support, they have created a pattern, improving their needle control and observing the outcomes of different techniques and directions. They will now have to select the most appropriate type of stitch and fabric in order to create images, considering the symbolism they have learnt about previously.	- Running stitch - Back stitch - Appropriateness - Representation - Symbolism
How has Brazil changed as a result of British Colonisation?				
To create a carnival float Children will design and make their own carnival float including a freestanding structure within a given dimension Focus – Applying understanding of how to strengthen structures	• To create detailed exploded diagrams • To create a structure using a range of resources and materials • To select appropriate tools and use these safely • To bend and shape wire accurately • To measure and cut accurately	• To know the origin of carnival • To know the authentic colours, symbols and designs related to carnival • To know the properties of different materials and how these can be used to created a desired finish	In KS1 children have made a moving vehicles using axles. Children have explored what a structure is and how to strengthen it, they have learnt about the importance of being accurate with measuring and cutting as well as methods for joining. Bringing these skills and knowledge together they will now create a moving float, attached to the float will be a free-standing structure that is designed with inspiration from carnivals.	- Carnival - Float - Dimensions - Structured

Lower KS2

The project	Skills	Knowledge	Why this? Why now?	Vocabulary
What natural resources did humans use in Stone Age Britain?				
Stone Age houses After learning about how buildings and shelters were created around this period in time children will create their own scale model using natural resources they have selected Focus – selecting resources and tools for their functional properties	• To research traditional and ancient building techniques • To create a design with key details • To understand how key events in design have helped shape the world • To apply knowledge in how to reinforce	• To know that during Stone Age Britain, natural resources were used to build • To know that the property of a material or natural object can determine its use • To know that the purpose of a structure can determine the resources that will be needed	In KS1 children created buildings using given resources such as boxes and man made materials such as card. They will now have to use their acquired knowledge of building techniques and resources to carefully consider how a structure can be created thinking about shape and height.	- Resources - Structure - Reinforce - Methods - Natural - Techniques
How did Ancient Egyptians use rivers?				
Water transportation Children will take inspiration from a Shaduf to educate others about how the Egyptians transported water from the Nile Focus – Understanding a mechanical system – levers	• To sketch a design • To create a moving part • To adjust weights and lengths on levers for them to become effective • To join 2 materials • To consider materials used	• To know that Ancient Egyptians used Shadufs to remove water from the Nile • To know that a shaduf works using levers • To know the length of a lever effects its usefulness	Previously children have learnt how to use cardboard joints and consider what is important when planning having a moving part within a construction. They will now have to measure and cut accurately as well as carefully planning how to ensure their lever can be functional to fulfil the brief.	- Transportation - Lever - Counterbalance
How does the Earth negatively impact on humans?				
Create a scale building that can with stand 'shudders' Children will use a range of resources to create a scale model of a building that can be used as a 'prototype' for an area that is affected by risk of earthquakes Focus – apply their understanding of how to strengthen structures	• To carefully considering design based on research • To create annotated sketches • To strengthen joints • To select appropriate materials and tools	• To know that structures are designed and built differently depending on their purpose • To know that in some places in the world buildings are constructing in ways to withstand shudders • To know that the height of a structure can effect the reinforcements needed	Previously children have learnt how to build a simple structure for a given purpose using household materials and how they can strengthen these. They will now consider how this could relate to the 'real world' considering the size of their structure, materials used and how it is constructed.	- Considerations - Reinforcement -

KS1

The project	Skills	Knowledge	Why this? Why now?	Vocabulary
Is exploring important?				
Salad After locating where different fruit and vegetables come from around the world, children will design their own salads Focus - selecting appropriate tools and ingredients	• To use tools with care and accuracy • To use appropriate cutting techniques: Bridge Claw • To select appropriate ingredients for a quality final product	• To know where certain fruit and vegetables are grown • To know the difference between seasonal fruit and vegetables • To know different tools can be used for different jobs • To know that different fruit and vegetables need to be prepared differently	In EYFS children learnt about balanced diets, different types of food and began to experience making various dishes , such as soup and crumbles. They will now take this knowledge further and have more responsibility in the designing and preparation phase.	• Seasonal • Preparation • Claw grip • Bridge grip
How do humans use water?				
Water Transportation Children will create a structure that can transport water from a one point to another considering the materials that should be used when water is involved. Focus – Building a structure that is stable with appropriate materials	• To select materials appropriately • To plan carefully • To make adaptations to a design	• To know how water is transported in the 'real world' • To know the properties of different materials • To know that naturally water will always travel 'downhill'	In EYFS children have experimented with construction, enabling water to pass from one point to another using resources given to them. They will now have to consider how to make models where by water can travel from one point to another, considering the materials that will choose and adapt to make their designs work.	- Transport - Properties - Materials - Stable
Do inventions make the world better?				
Clothing Children will design and make an item of clothing that is suitable for a chosen purpose Focus - Cutting, joining and finishing using a range of fabrics	• To select materials based on their properties • To join two materials using an effective and appropriate method • To cut accurately	• To know that different items of clothing are suitable for different purposes • To know different methods of joining: Stapling Stitching Double sided tape Glue • To know what makes an effective product	In EYFS children were given templates to cut around to make items out of fabric. They explored seasonal clothing and why we wear different clothes at different times of year. Taking this knowledge they will have to create their own templates considering the size of the wearer, and consider what materials will be best for the intended use of the clothing.	- Fabric - Joining - Purpose - Template