DESIGN TECHNOLOGY Progression Document

DESIGN TECHNOLOGY : KEY STAGE ONE		
Subject Content from Programme of Study	STEAM Topic Title & Outcome	When will pupils be taught this?
<u>Design</u> Pupils should be taught to design purposeful, functional, appealing products for themselves and other users based on design criteria	*What makes our Planet blue?* Design an articulated grabber or tool for cleaning up rubbish on the beach. Test functional design by collecting recyclable rubbish from a beach. Use the recycled materials to design and build a sea sculpture reflecting why it's important to look after our planet. *Who's awake in the middle of the night?* Plan, design and make a hedgehog/bird habitat including key characteristics. Evaluate designs: is it purposeful? Is it functional? Is it bringing wildlife to our School?	Cycle A: Spring (2) *What makes our Planet blue?* Cycle B: Spring (2) *Who's awake in the middle of the night?*
Pupils should be taught to generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology	*Fire and Light: Why is light important?* Generate, develop, model and communicate ideas by re-creating pudding lane. Discuss drawings and previously made templates by gathering information using technology e.g. researching the key features of a 17th century house.	Cycle A: Autumn (2) *Fire and Light: Why is light important? (linked to The Great Fire of London)*

	Children to bake bread and describe how it looks, feels, smells and tastes.	
Make Pupils should be taught to select from and use a range of tools and equipment to perform practical tasks	*Amazing architecture 1) world landmarks 2) Cornish castles* Children to access a range of equipment to investigate the most suitable materials to make a castle window or a catapult. Use a range of tools to create a 3D model of a castle including a drawbridge or rescue device. Use technology to explore castle tours such as Warrick and Windsor Castle.	Cycle B: Autumn (1) *Amazing architecture 1) world landmarks 2) Cornish castles*
Pupils should be taught to select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics	*How do you look after a penguin?* Explore and use a wide range of *construction materials* to build a rubber band powered boat to keep the penguin (from 'Lost and found') afloat. Select from a wide range of *textiles* to layer and create a frozen landscape collage and create a clay penguin sculpture. *What's it like in the wild?* Explore and use a wide range of *construction materials* to create 3D carboard box animal sculptures and suitable habitats. Link to technology by using softease to create a suitable habitat around a clipart animal.	Cycle B: Spring (1) *How do you look after a penguin?* Cycle A: Summer (2) *What's it like in the wild?*

	Select from a range of *textiles* to create Adinkra painting onto fabric and print a maize field using corn. Select and use *ingredients* to make fruit smoothies.	
Evaluate Pupils should be taught to explore and evaluate a range of existing products.	*What's it like to be an Astronaut?* Explore and evaluate a range of existing 'space' products including: Space rocket/shuttle, Astronauts space suit and Space buggies/rovers. For example: how burning fuel is used for a space rocket take off. Carry out Coke/Mentos and balloon/string experiments to see how rockets move. Pupils can design, create and evaluate own straw rockets by comparing their structure to existing rockets.	Cycle A: Spring (1) *What's it like to be an Astronaut?*
Pupils should be taught to evaluate their ideas and products against design criteria.	*How do we keep our coasts safe?* Create and evaluate a new idea to stop the seagulls from stealing the lighthouse keepers' lunch . Provide pupils with a design-criteria which they can evaluate their product against. Pupils to explore how a lighthouse light works by using electrical circuits to power a light. Create own working lighthouse model by adding an electrical circuit as a source of light. Use technology to present how the electrical circuit works to	Cycle A: Autumn (1) *How do we keep our coasts safe?*

	power the light in their own lighthouses.	
Technical Knowledge Pupils should be taught to build structures, exploring how they can be made stronger, stiffer and more stable.	*How do you build a school? Linked to The Three Little Pigs (TTLP)* Investigate which materials were used to build Nansledan school and compare with the materials used in TTLP story. Discuss the role and importance of an Architect. Children to plan, investigate, design and build their own structure in order to keep the three little pigs safe. Explore how they can be made stronger, stiffer and more stable by regularly testing and evaluating.	Cycle A: Autumn (1) *How do you build a school? Linked to The Three Little Pigs.*
Pupils should be taught to explore and use mechanisms in their products.	*What's special about our beautiful Cornwall?* Design and evaluate an original device that the RNLI could use in a rescue. Provide pupils with a design-criteria which they can evaluate their product against.	Cycle A: Summer (1) *What's special about our beautiful Cornwall?*
Cooking and Nutrition Pupils should be taught to use the basic principles of a healthy and varied diet to prepare dishes.	*How can I be and stay healthy?* Discuss the principles of a healthy and varied diet by showing children a healthy eating plate. Get children to identify what foods are healthy and why. Discuss the different food groups and play a sorting activity. Children to design own food plate. Prepare a healthy dish by tasting different fruits. Pupils to design, make and evaluate their own fruit	Cycle B: Summer (2) *How can I stay healthy?*

	salads. What flavours go together? Discuss why we eat fruit and explore the different ways fruit can be used in cooking e.g. to create their own fruit jelly.	
Pupils should be taught to understand where food comes from.	*What's making that noise?* Pupils to make own musical instruments using a wide range of recycled materials e.g. carboard, plastic, rubber bands. Children can investigate how and why different instruments makes different sounds. *Where does our food come from?* Use boxes, with a scent, to enable children to investigate different smells and record ideas/findings. Children to predict where they think the food has come from. Pupils to visit a local orchard and discuss how produce is looked after. Children to plant vegetables in school, watch how they grow and use them for cooking. Use technology to research and identify where and why some foods come from different countries.	Cycle B: Autumn (2) *What's making that noise?* Cycle B: Summer (1) *Where does our food come from?*

DESIGN TECHNOLOGY : KEY STAGE TWO		
Subject Content from Programme of Study	STEAM Topic Title & Outcome	When will pupils be taught this?

Design • Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups	Innovators *How do you join things together?* Stationary/Office organisation solutions. Inventing alternatives to post it notes, blu tac, paper clips and drawing pins. Pioneers *What makes a wheelie fast?* Mechanical engineering topic developing rubber tyres – record observations and use them to review and revisit. Explore the impact of different road surfaces.	Cycle B: Spring (1) *How do you join things together?* Cycle B: Summer (1) *What makes a wheelie fast?*
• Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	Innovators *Water, water everywhere.* Design a filtration system to get drinking water. Pupils to market water bottle covers making insulating covers from neoprene. Pioneers *How do you build a school?* Design and market water bottle cover from neoprene.	Cycle A: Autumn (1) *Water, water everywhere.* Cycle A: Autumn (1) *How do you build a school?*
Make • Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately	Innovators *What secrets are held within rocks?* Pupils to build/develop a wormery. Design and make fossil sculpture using clay and clay techniques to add detail.	Cycle B: Spring (2) *What secrets are hidden within rocks?*

	How can we manage our waste? Individual upcycling and re-purposing something amazing from a load of rubbish. Pupils to develop bee houses and planting pollinators. Pioneers *What impact does tourism have on us?* Design and make mini Eden projects/biodomes to keep in school. Create bird feeding houses using wood.	Cycle B: Summer (1) *How can we manage our waste?* Cycle B: Spring (1) *What impact does tourism have on us?*
• Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities	Innovators *How can I stay healthy? Why do bees fly?* Pupils to cook healthy snacks using honey and fruit. To also use recycling paper to make seed bombs. *What should we eat and how can we stay healthy?* Tasting different fruits and vegetables. Cooking and growing local produce that make up a healthy balanced meal. Pioneers *How can I be fit and healthy? Nansledan Olympics.* Pupils to taste different fruits and vegetables. Cook and grow local produce. *How do you balance things?* Pupils to explore a balanced diet – Eatwell	Cycle A: Summer (2) *How can I stay healthy? Why do bees fly?* Cycle B: Summer (2) *What should we eat and how can we stay healthy?* Cycle A: Summer (2) *How can I be fit and healthy? Nansledan Olympics.* Cycle B: Autumn (2) *How do you balance things?*

	plate and different food groups e.g. how too much sugar can you feel and the importance of vegetables in our diet. Pupils to design and cook a healthy balanced meal.	
Evaluate • Investigate and analyse a range of existing products	Innovators *Can we be a plastic free school?* Investigate a range of existing plastic products and analyse how they could be changed to benefit the school. Pioneers *What is light and what's a black hole?* Design and build a periscope by sketching and labelling the features before building and evaluating.	Cycle A: Summer (1) *Can we be a plastic free school?* Cycle B: Autumn (1) *What is light and what's a black hole?*
• Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work	Innovators *What does a Community need?* Investigate circuit components, conductors and insulators. Design and build lanterns for the lantern parade to support a local community initiative. *What time is it? Light and dark.* Chocolate packaging/new chocolate bar. Pioneers *How can Cornwall be ready for the future?* Design and build lanterns	Cycle A: Autumn (2) *What does a Community need?* Cycle B: Autumn (1) *What time is it? Light and dark.* Cycle A: Autumn (2) *How can Cornwall be ready for the future?*

	for the lantern parade with Key Stage 1.	
• Understand how key events and individuals in design and technology have helped shape the world	Innovators *Who were the people behind the scenes of modern Aviation?* Pioneers *How could other planets be habitable for humans?* Understand individuals that have designed space rovers and record findings. Design for areohub mascot.	Cycle A: Spring (1) *Who were the people behind the scenes of modern Aviation?* Cycle A: Spring (1) *How could other planets be habitable for humans?*
Technical knowledge • Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Innovators *How can we manage our waste?* Pupils to apply understanding of how to strengthen, stiffen and reinforce complex structures by making bee houses. Pioneers *What's in the woods?* To increase wildlife in the woods children should explore why food, shelter, water and living space are needed. From this, pupils can build a hedgehog box/house and apply understanding of how to strengthen, stiffen and reinforce complex structures.	Cycle B: Summer (1) *How can we manage our waste?* Cycle A: Spring (2) *What's in the woods?*
• Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]	Innovators *How did the Victorians make the most of life?* Pupils to understand and use the mechanical systems in	Cycle A: Spring (2) *How did the Victorians make the most of life?*

	fairground machines/games. To record design structure, revisit ideas and adapt if needed. Pioneers *What makes a champion?* Green car races and Olympic link.	 Cycle B: Summer (2) *What makes a champion?*
• Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]	Innovators *How is technology used to communicate?* Pupils to create own working lighthouse model. The bulb in a lighthouse is a source of light. Can you think of anymore? Pioneers *What can be discovered by Voyages?* Pupils to create own working lighthouse model. The bulb in a lighthouse is a source of light. Can you think of anymore?	Cycle B: Autumn (2) *How is technology used to communicate?* Cycle A: Summer (1) *What can be discovered by Voyages?*
• Apply their understanding of computing to program, monitor and control their products.	Innovators *Who were the people behind the scenes of modern Aviation?* Pupils to use computing to program, monitor and control Aviation apps and products online. Pioneers *Can you keep a secret? Can you crack a code?* Understand computer coding to program and control technology such as bebops.	Cycle A: Spring (1) *Who were the people behind the scenes of modern Aviation?* Cycle B: Spring (2) *Can you keep a secret? Can you crack a code?*