

## Curriculum Overview: Design and Technology

*'Design is so simple- that's why it's complicated!' Paul Rand*

*Our children live in an ever-changing, rapidly advancing world where new knowledge and new skills need to be acquired, understood and mastered at a rate previously unheard of.*

*We aim to enable children to learn the full range of knowledge, skills and understanding in order to appreciate their world as well as recognising and embracing their role in becoming citizens who make a positive contribution to our society; now and in the future.*

*Our community and its environment help shape the way in which we structure learning opportunities. We balance the celebration of all positive aspects of our local context with the ability to look beyond the Furness Peninsula in order to understand and embrace the wider world.*

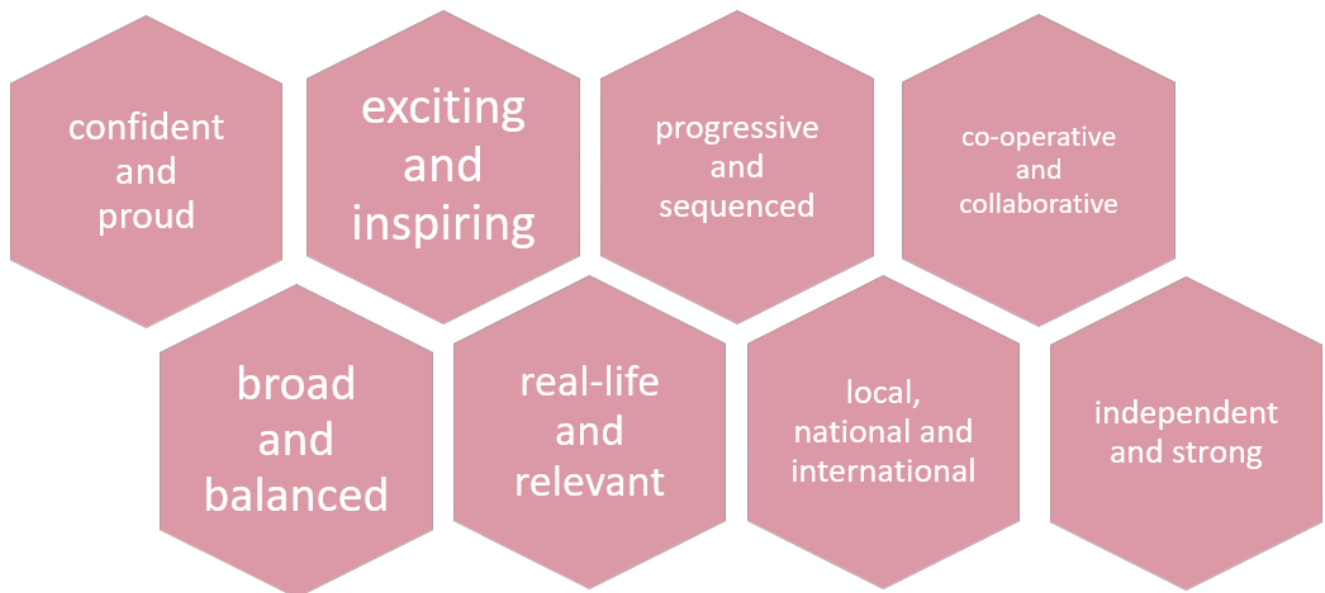
*We are totally committed to learning of the highest standard in academic, personal and social forms and have these aspirations for all children in our care.*

Our D&T Curriculum draws on the aims and subject content of The National Curriculum in England. Topics are organised over a two year rolling programme due to mixed aged classes; making cross-curricular links with other parts of the curriculum. Many skills are revisited in all year groups with progression focused on advancing skills across the phases rather than by year group. These skills are built on with more scope for resources/more challenging materials to use and with the progression of more intricate tools. Design and Technology inspires creativity and imagination. Being creative, children learn how to take risks and 'think outside of the box', then through evaluating their plans and designs, they develop an understanding of the wider world. Objectives are covered in a variety of ways; some as part of the learning on school trips/residential and others as a block of learning over half days/full days.

We also participate in FESP (Furness Education and Skills Partnership) this facilitates projects/ events which enable and drive innovation and enterprise. This includes events such as Skills Fest, Furness Big Bang, Build My Skills and The Road To Engineering. The Barrow Engineering Project raises the profile of Engineering in the local area and enriches STEM projects in school. Our school has championed these schemes and has a successful after school 'Engineering Club' which enters the IET 'First Lego League' each year.

***The national curriculum for design and technology aims to ensure that all pupils:***

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world***
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users***
- critique, evaluate and test their ideas and products and the work of others***
- understand and apply the principles of nutrition and learn how to cook.***



### Planning Progression:

<p>Y3/4 Cycle A Design and Build an Animal Shelter. <a href="#">Link to habitats: Bug-Houses (science)</a></p>	<p>Visit to South Lakes Animal Park and observe animals in their "Natural" habitat! Discuss what a home/habitat needs: warmth, food, shelter, protection Inform the children that they will be designing and building 'A Bug-House/hotel'. Discuss whether a bug/mini-beast has the same needs as say a 'Lion?' Plan and discuss whether their plan/design meets the set criteria of needs To be able to select the appropriate resources/materials to produce 'A Bug-house' To be able to measure accurately, making cuts and holes with the appropriate tool To be able to evaluate and suggest improvements for a design</p>
<p><b>STEM DAY:</b> Moving Games and Toys <a href="#">Link to Forces (science)</a></p>	<p>Ask children how some toys are able to move. Responses will include; batteries (electricity), wind-up, levers and gears, blow (pneumatic). Link to 'Forces'. Stem Day activities and resources are usually different every year- they can be making question and answer games with buzzers, making 'Scuttlebugs' which wind up, making animals that move their mouths through gears/levers or designing a winged animal that moves their wings through pneumatics (syringe and tubes). However all follow the basic steps of progression: Children can follow a step by step plan, choosing the right equipment and materials To be able to choose a resource for both its suitability and its appearance To be able to select the most appropriate tools and techniques for a given task To be able to follow instructions and make a product which uses a 'type of force' as an important component To be able to evaluate the finished appearance and function against the original criteria</p>
<p>Design and make a distinctive warrior shield: <a href="#">Link to British Isles- Invaders &amp; Settlers history study</a></p>	<p>Discuss which tribes invaded and settled in Britain in the early ADs Ask children to imagine what it would have been like living at these times- either as a warrior or as a farmer. Inform children that for Homework they are to research a tribe of their choice (Celts/Romans/Angles &amp; Saxons, looking at different shield designs - they then can plan and prepare their chosen design ready for the next lesson. They will need to bring in the resources needed to make their shield. Equipment/tools will be in school. Once they have made their shield the children will need to evaluate and suggest improvements on their finished design.</p>

<p>Y3/4 Cycle B Food; Fruit Rainbow/Breakfast <a href="#">Link to Healthy Lifestyle (science)</a></p>	<p>To understand a balanced diet To appreciate why there are food groups Identify which type of foods are in the food groups Describe how food ingredients come together Plan and Design a dish to be both attractive and healthy To think about which equipment/utensils are needed To understand to be hygienic and safe when using food Select the different foods and present the dish in an interesting way to make a colourful/healthy dish To evaluate the dish both for nutritional/balanced diet and for appearance</p>
<p>Design and make a working Musical Instrument <a href="#">Link to sound (science)</a></p>	<p>To understand that sound is produced by vibrations Listen to musical instruments (can be on-line), understand that vibrations are made differently, blowing, hitting, strumming etc Discuss the 'Family' type instruments can belong to; brass, woodwind, percussion, strings. Understand that to produce the sound for these instruments it is either to produce air, by blowing, hitting or plucking. Creating a vibration To plan and draw ideas for a working musical instrument To discuss with others and explain how a particular design will work To be able to evaluate and suggest improvements for the design To be able to follow a plan/design choosing the right materials and equipment Learn how to measure accurately, making cuts and holes with the appropriate tool To be able to persevere and adapt work when original ideas do not go to plan To evaluate appearance and working function</p>
<p>Design and Build a maze. <a href="#">Link to Ancient Greeks (Topic/History)</a></p>	<p>Theme based on ' Theseus and the Minotaur in the Labyrinth' To understand what a Labyrinth is. Take children's feedback and agree it is similar to a maze. Ask has anyone been in a maze? (The maize maze maybe!). Understand that it is a physical puzzle to get out of Children to come up with a range of ideas of how to build a model maze Discuss ideas and evaluate with others to produce a plan To be able to follow a step by step plan, selecting the right equipment and materials To be able to explain how the model maze works to others To be able to use a range of tools and equipment competently To be able to persevere, evaluate and adapt work when original ideas do not go to</p>
<p>Y5/6 Cycle A Shelter Building at Grizedale (<a href="#">forest schools</a>)</p>	<p>As part of 'Forest Schools' experience, the children have a day at Grizedale Forest. Once children are in a certain area of the forest (no more than half the size of a standard football pitch), they are given some string and a piece of rope. They are then instructed to get into groups of 5 and 'talk-plan' how they would use what they have <b>PLUS</b> 'natural debris' they can see on the forest floor, to build a 'Water-Tight' shelter in a set time. Children will come up with a range of ideas and agree on a group decision Working together the children will work as efficiently as they can to build their shelter Children will be resilient and persevere, adapting their design if the original idea does not work As they continue to build they will have the opportunity to evaluate the shelter and make changes both for purpose and appearance Children will have the opportunity to go around each group's shelter and ask related questions on how it was built/using ideas from other people. Also they can evaluate the other shelters Children will test their shelter to see how 'Water-Tight' it is and then evaluate their design against the brief</p>

<p><b><u>STEM DAY:</u></b> Building an electric vehicle. (Electricity/Science)</p>	<p>As part of Uppers STEM DAY we supply the children with a kit between two, which comes with all the components to build an electric vehicle Children will follow the detailed plans to achieve a successful moving electric vehicle- but will have the flexibility and the opportunity to be original in their 'outer' design of the vehicle, taking into account it has to 'house' all the working parts eg battery pack, wires, switch etc Children will be able to follow and refine a set of plans Children will be able to work accurately measuring, cutting, drilling, attaching etc Children will be resilient and persevere; adapting their model if the original idea does not work Children will be able to test and evaluate their product</p>
<p>Food: From another country/culture (International Day)</p>	<p>As part of International week- each class has a nominated 'International' country to research. At the end of the week, we celebrate the countries each class has researched and produce a dish (or two) to share Children given the opportunity to research the relevant country and look for appropriate recipes' which we could make on the day. Children will discuss their ideas and agree on dishes, creating a step by step plan Children will work within a budget and cost out the different food and amount of food needed Children will be both hygienic and safe when using food and utensils Children will evaluate the dishes and suggest improvements if in theory they made the dishes again</p>
<p>Y5/6 Cycle B Design and make a papier mache canopic jar. (Link with Africa/Egypt topic)</p>	<p>As part of the 'Mummification' process, children will learn that some organs were put into 'Canopic Jars' Understand that 'Canopic Jars' were represented by the heads of 4 (mostly) animal gods Discuss how children could make a 'Canopic Jar' head out of papier- mache and the container out of cylindrical materials Children to come up with a range of ideas for their 'head' and body after looking at information from different sources Children can suggest alternative plans; outlining the positive features and draw backs. Children can use a range of tools, equipment and techniques to produce a finished product Children are able to show that they considered the culture and society in their plans and design To be able to evaluate the appearance and purpose of the 'Canopic Jar' (Does it do what it is intended to do?)</p>
<p>Make a basic 'Orrery' Link with visit to Jodrell Bank (Earth&amp; Space- Science)</p>	<p>Visit to 'Jodrell Bank' observatory as part of Science (Earth&amp; Space) learning In the planet pavilion children will be given a talk about the clockwork Orrery - a working scale model of the solar system - the largest of its kind in the World Children will be asked to research how to build a basic, moving 'Orrery' for homework Children to come up with a range of ideas after looking at information from different sources Children will be able to produce a plan and explain how it works, refining their plans when needed in the making process Children will be able to use a range of tools and equipment competently Children will be given the opportunity to test and evaluate their model</p>

<p>Linked with Science topic on Earth and Space- <i>Design and test paper Rockets.</i></p>	<p>Show children the basic design and how wide it should be to be positioned on THE LAUNCHER. Ask chn to design and then make a paper rocket which will be launched by an air pressure system. We will record how far the rocket fly's. Reflect and modify design and model after the first launch. Talk about streamlined/air resistance/position of nose/fins etc to make it fly with more aerodynamics.</p>
<p>Design and make a pin-hole camera/periscope. <i>(Light)</i></p>	<p>As part of the light topic children will produce a detailed, step by step plan for either a pin-hole camera or a periscope Children will have the opportunity to follow and refine their plans and discuss with others justifying their plans in a convincing way To be able to use a range of tools and equipment competently Children to be able to test and evaluate their product, making improvements to the design if necessary</p>
<p>Food: North African Cooking <i>(Link with Africa/Egypt topic)</i></p>	<p>As part of Topic research on North African cooking, children decide on a recipe that fits their budget and is not too complicated to cook Children use the internet/research to inform their plans and ideas Children will be able to show that they have considered the culture and society in their dish Children to be hygienic and safe when using food and utensils Children to be able to evaluate how successful they have been in making the recipe and suggest any alternatives that may improve the dish</p>