



Whiteshill Primary School

Design and Technology

Progression and Two-Year Rolling Programme

Our Curriculum Drivers

Our **vision** at Whiteshill that drives our curriculum is 'We are **curious**, we are **unique**, we are **together**, we are Whiteshill'.

In order to achieve our school vision, our Design and Technology curriculum is designed so that you will see ***all pupils***:

Being curious:

- They understand what they do and don't already know and recall previously learnt knowledge in order to make links and commit knowledge to their long-term memory
- They ask and answer their own questions
- They demonstrate a growth mindset including taking risks and making mistakes
- They try new things which they have not experienced before and take part in outdoor and real-life experiences
- They use a wide and effective vocabulary
- They demonstrate a fascination about the world and its people

Being unique:

- They make independent choices about their learning
- They work confidently on their own without support
- They are given equal opportunity to learn and work to their full potential
- They bring their own experiences and knowledge to the learning and know that these are valued
- They respond to effective individual feedback from the teacher which allows them to learn more effectively
- They take pride in their work and have high expectations for presentation

Working together:

- They make links in their learning to the school community, local area and the wider world.
- They work as part of a team and know how to use effective social skills
- They articulate confidently what they have learnt
- They understand the role of designers and technology in society
- They demonstrate empathy and respect for all

The intent of our Design and Technology curriculum is to ensure that **all pupils** who leave Whiteshill Primary School at the end of year 6 will know:

- How to 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.
- How to generate, develop, model and communicate their ideas in a range of ways.
- How to make, select from and use a wide range of tools and equipment to perform practical tasks.
- How to select from and use a wide range of materials and components according to their functional properties and aesthetic qualities
- How to evaluate, investigate and analyse a range of existing products.
- How to evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
- How key events and individuals in design and technology have helped shape the world.
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- How mechanical systems can be used in their products
- How electrical systems can be used in their products.
- How to use computing to program, monitor and control their products.

To achieve this, the following technical knowledge will be recalled and used each year. The knowledge attached to each year group will be expressly taught, knowledge from previous year groups will be recalled to allow **all pupils** to commit it to their long-term memory:

	Elm Class	Maple Class	Oak Class
Cooking and Nutrition	<p>I know where food comes from.</p> <p>I know the different groups on an 'eatwell' plate.</p> <p>I know that everyone should eat at least 5 portions of fruit and veg a day.</p> <p>I know how to use the principles of a healthy and varied diet to prepare dishes.</p> <p>I know how to evaluate a dish based on its tastes & texture.</p> <p>I know people like and dislike different</p>	<p>I know the principles of a healthy and varied diet.</p> <p>I know how to prepare and cook a variety of predominantly savoury dishes.</p> <p>I know how to use a range of cooking techniques.</p>	<p>I know what seasonality is.</p> <p>I know where and how a variety of ingredients are grown, reared, caught and processed.</p>

	<p>food because of their taste and texture. I know basic hygiene rules for preparing food.</p>		
Mechanisms	<p>I know how to use axels and wheels to make my product move. I know how to use levers and sliders to make my product move.</p>	<p>I know how to use linkages to make my product move.</p>	<p>I know the different types of lever and how they work. I know how to adjust my lever to make my product move effectively. I know how to make wheels and axels move efficiently.</p>
Textiles	<p>I know how to shape and cut textiles. I know how to join textiles. I know how to finish my textile product. I know how to use a template to cut material. I know how to make my textile structure strong and stable.</p>	<p>I know how to select from and use a wide range of textile materials. I know how to securely join two pieces of fabric together. I know how to use pattern and seam allowances.</p>	
Structures	<p>I know how to build a strong structure. I know how to make my structure stronger, stiffer and more stable.</p>	<p>I know how to strengthen a structure. I know how to stiffen and reinforce a structure.</p>	<p>I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure.</p>
Electrical Systems		<p>I know how to use a circuit to power my product. I know how to use a switch to turn my product on and off. I know how to use a bulb to light my product.</p>	<p>I know how to use a circuit to power my product. I know how to use a switch to turn my product on and off. I know how to use a motor to power my product.</p>
Programming		<p>I know how to program and control my product using a Microbit.</p>	<p>I know how to program, monitor and control my product using a Microbit.</p>
Cutting and shaping	<p>I know how to use a template (a shaped piece of rigid material used as an outline for cutting out) to cut out my material accurately. I know how to use scissors for cutting accurately. I know how to use saws for cutting when</p>	<p>I know how to cut and shape my product using a craft knife. I know how to use knives for chopping safely and independently. I know how to use a pattern piece to accurately cut my material. I know how to use different stitches to</p>	<p>I know which kitchen equipment to most effectively prepare my food before cooking. I know how to use a saw for cutting safely, effectively and independently.</p>

	<p>supervised. I know how to chop, grate and peel ingredients safely with supervision.</p>	<p>join materials. I know how to add a zip to join my material.</p>	
Joining	<p>I know how to join using split pins. I know how to use a needle and thread to join material. I know how to attach cardboard wheels to dowel axels. I know how to join corners using card triangles. I know how to use a glue gun safely for joining wood when supervised.</p>	<p>I know how to use a glue gun safely for joining independently. I know that triangular card makes the joins in my structure stronger. I know how to join material to wood using pins or staples. I know how to join linkages using split-pins.</p>	<p>I know how to use cane joiners. I know how to tie knots that will join my product securely. I know how to join a lever within a product so that it moves efficiently and effectively.</p>
Finishing	<p>I know that my product is not finished until it is decorated. I know that I need to think about my audience when I am finishing my product.</p>	<p>I know that I need to finish my product neatly. I know that I need to finish my product in line with the design criteria. I know that I need to finish my product in line with my audiences' ideas.</p>	<p>I know how I would finish my product if I had sufficient time, resources and cost. I know how to adjust the finish of my product based on time, resources and cost.</p>
Communicating Ideas	<p>I know how to communicate my idea through talk. I know how to communicate my idea through drawing. I know how to communicate my idea through online images. I know how to create a mock-up of my idea.</p>	<p>I know how to communicate my idea through discussion. I know how to create an annotated sketch of my idea. I know how to create a cross-sectional diagram of my idea.</p>	<p>I know how to make a prototype of my design. I know how to communicate my idea with an exploded diagram. I know how to communicate my idea using computer-aided design.</p>

Elm Class

	Enquiry 1	Science Link objectives	Enquiry 2	Science Link objectives
Year A	<p>Audience: School staff Product: A healthy Christmas buffet Purpose: To provide staff with a healthy, balanced lunch. Technical knowledge: Cooking and Nutrition I know where food comes from. I know the basic principles of a healthy and varied diet. I know how to use the principles of a healthy and varied diet to prepare dishes. Tools and Equipment: knives for chopping (supervised) Communicate idea through: I know how to communicate my idea through talking and drawing.</p>	<p>Animals including humans: Describe the importance for humans of eating the right amounts of different types of food.</p>	<p>Audience: Willow Class or playgroup Product & Purpose: Design a toy car for this age group to play with. Technical knowledge: Mechanisms: I know how to use axels and wheels to make my product move. Structures: I know how to build a strong structure. I know how to make my structure stronger, stiffer and more stable. Tools and Equipment: Saws for cutting (supervised) Card triangles for joining corners Glue gun for joining (supervised) Wooden rods Cardboard wheels Dowel axels Cardboard and paint for finishing Communicate idea through: I know how to communicate my idea through talking and online images.</p>	<p>Everyday materials: Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>
Year B	<p>Audience: Parents Product & Purpose: Christmas decorations Technical Knowledge: Textiles: I know how to shape and cut textiles. I know how to join textiles. I know how to finish my textile product. I know how to use a template to cut material. I know how to make my textile structure</p>		<p>Audience: Whole School (Assembly) Product & Purpose: Moving drawing to tell a story. Technical Knowledge: Mechanisms: I know how to use levers and sliders to make my product move. Tools and Equipment: Scissors for cutting and shaping</p>	

<p>strong and stable.</p> <p>Tools and Equipment: Scissors for cutting Needle and thread for joining Sequins and fabric paint for finishing. I know how to use a template (a shaped piece of rigid material used as an outline for cutting out) to cut out my material accurately.</p> <p>Communicate idea through: I know how to communicate my idea through talking and drawing.</p>		<p>Split pins for joining Paint for finishing</p> <p>Communicate idea through: I know how to communicate my idea through talking and mock-ups.</p>	
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Maple Class

	Enquiry 1	Science Link Objectives	Enquiry 2	Science Link Objectives
Year A	<p>Audience: Elm class child Product: Night Light Purpose: to light up their bedroom at night throughout the Christmas period. Technical Knowledge: Electrical systems: I know how to use a circuit to power my product. I know how to use a switch to turn my product on and off. I know how to use a bulb to light my product. Programming: I know how to program, monitor and control my product using a microbit. Tools and Equipment: Scissors and craft knife for cutting and shaping Glue gun for joining Permanent markers for finishing. Communicate idea through: I know how to communicate my idea through discussion and annotated sketches.</p>	<p>Electricity: Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Audience: Moreton Hill Care Home residents Product & Purpose: Healthy balanced menu and meal Technical Knowledge: Cooking and Nutrition: I know the principles of a healthy and varied diet. I know how to prepare and cook a variety of predominantly savoury dishes. I know how to use a range of cooking techniques. Tools and Equipment: Knives for cutting Communicate idea through: I know how to communicate my idea through discussion and annotated sketches.</p>	<p>Animals including humans: Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food, they get nutrition from what they eat.</p>
Year B	<p>Audience: Willow class Product & Purpose: shadow puppet theatre to entertain Technical knowledge: Structures: I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure.</p>	<p>Light: Recognise that they need light in order to see things and that dark is the absence of light. Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p>	<p>Audience: Ages 8-11 Product & Purpose: Making a pencil case for a primary aged child Technical Knowledge: Textiles: I know how to select from and use a wide range of textile materials. I know how to securely join two pieces of fabric together.</p>	

	<p>Mechanisms: I know how to use linkages to make my product move.</p> <p>Tools and Equipment: Wooden rods Triangular card for re-inforcing Glue gun for joining Pins or staples for joining material to wood White cotton sheets Lollipop sticks/card for puppets Split pins for joining linkages Felt-tip pens and material for finishing e.g. wool for hair</p> <p>Communicate idea through: I know how to communicate my idea through discussion and cross-sectional diagrams.</p>	<p>Find patterns in the way that the size of shadows change</p>	<p>I know how to use pattern and seam allowances.</p> <p>Tools and Equipment: Pins, needles and thread for joining Zips for joining Paper patterns Selection of materials to choose from for the pencil case base. Buttons, sequins and fabric pens for finishing. I know how to use a pattern piece to accurately cut my material.</p> <p>Communicate idea through: I know how to communicate my idea through discussion.</p>	
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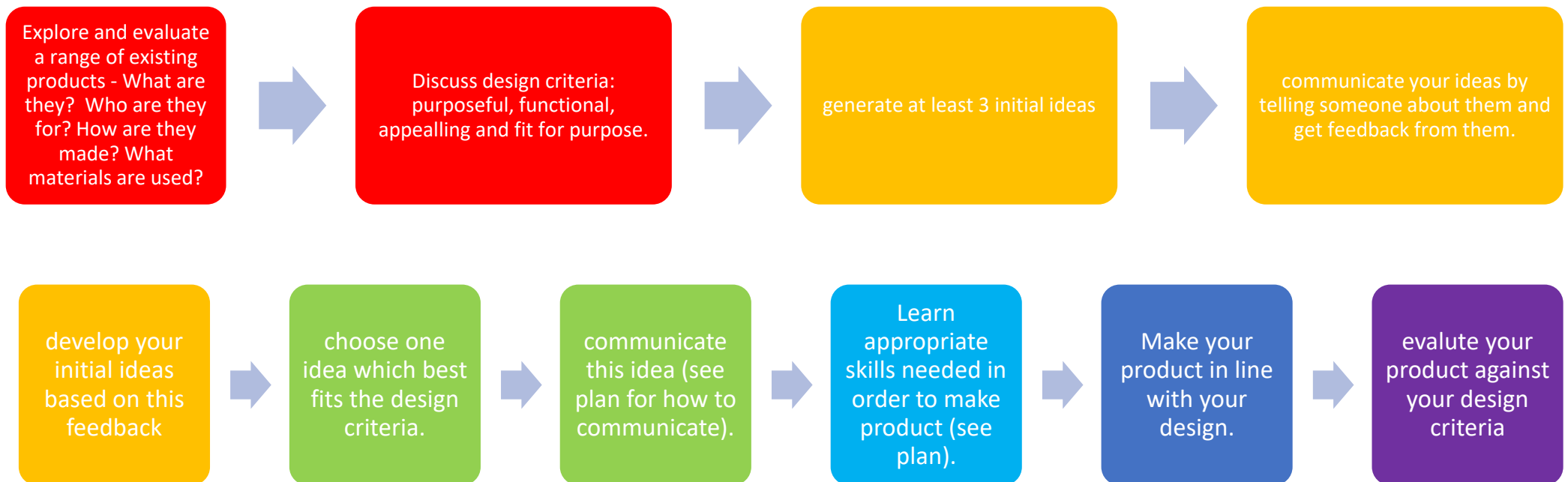
Oak Class

	Enquiry 1	Science Link Objectives	Enquiry 2	Science Link Objectives:
Year A	<p>Audience: Birdwatchers Product: camouflaged bird-hide Purpose: to shelter a group of people whilst they watch birds in the wild. Technical Knowledge: Structures: I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure. Tools and Equipment: Tarpaulins Bamboo canes Cane joiners String for joining Straws for prototypes Blutack for joining prototypes Communicate idea through: I know how to communicate my idea through discussion. I know how to make a prototype of my design.</p>		<p>Audience: Parents Product & Purpose: Design a seasonal meal for parents Technical Knowledge: Cooking & Nutrition: I know the principles of a healthy and varied diet. I know how to prepare and cook a variety of predominantly savoury dishes. I know how to use a range of cooking techniques. I know what seasonality is. I know where and how a variety of ingredients are grown, reared, caught and processed. Tools and Equipment: Knives for cutting Kitchen equipment Communicate idea through: I know how to communicate my idea through discussion and annotated sketches.</p>	
Year B	<p>Audience: Henry V army Product & Purpose: Catapult for use against their enemies. Technical knowledge: Mechanisms: I know how to use levers to make my product move. I know how to adjust my lever to make my product move effectively.</p>	<p>Forces: To recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>Audience: NASA Product & Purpose: Earth & Space unit - Creating a Mars Rover prototype model – Motorised vehicle using microbits to program. https://www.tts-group.co.uk/blog/2016/11/02/pulley-motorised-vehicle.html Technical knowledge: Mechanisms: I know how to use wheels and axels to make</p>	<p>Electricity: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of</p>

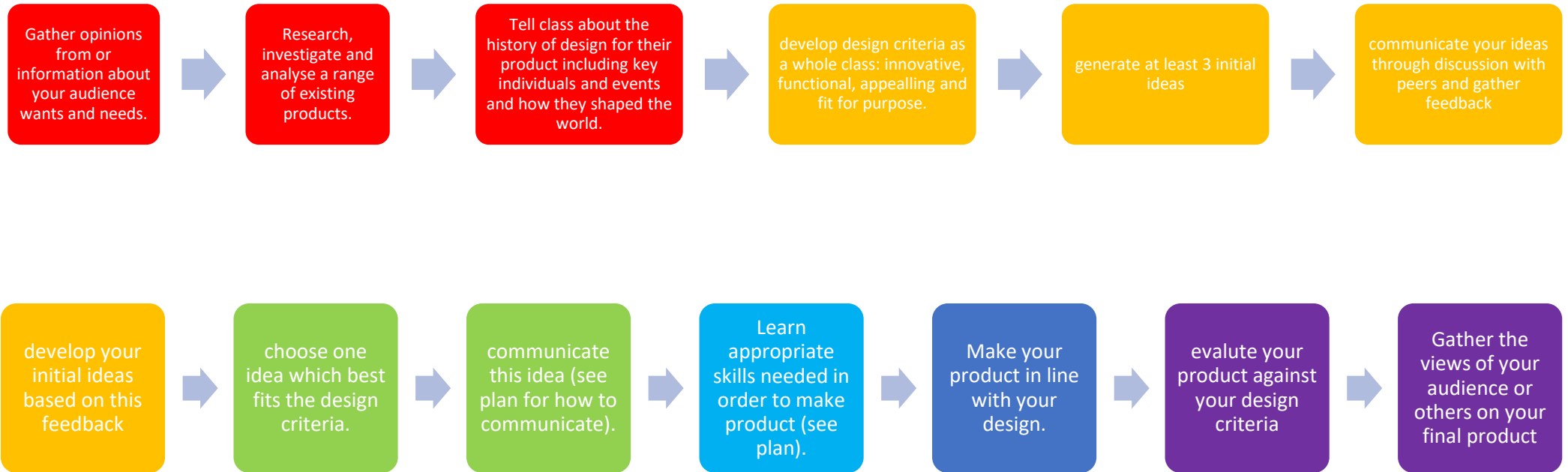
	<p>Tools and Equipment: Elastic bands for joining Lollipop sticks</p> <p>Communicate idea through: I know how to communicate my idea through discussion and exploded diagrams.</p>		<p>my products move.</p> <p>Electrical Systems: I know how to use a circuit to power my product. I know how to use a switch to turn my product on and off. I know how to use a motor to power my product.</p> <p>Programming: I know how to program, monitor and control my product using a microbit.</p> <p>Tools and Equipment: Wheels and axels Wooden rods Batteries and motor Electrical circuit Strengthening corners.</p> <p>Communicate idea through: I know how to communicate my idea through discussion and computer-aided design. www.tinkercad.com</p>	<p>buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram. Compare and group together everyday material on the basis of their conductivity (electrical and thermal).</p>
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To ensure progression in designing, making and evaluating, the following small steps planning sequences will be followed:

Planning Sequence Elm Class



Planning Sequence Maple Class



Planning Sequence Oak Class

