Longney CofE Primary Academy
Design and Technology
Progression and Two-Year Rolling Programme

The aim of our Design and Technology curriculum is to ensure that ***all pupils*** who leave Longney CofE Primary Academy 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:

	Skylark Class	Goldfinch Class	Swift Class
Cooking and Nutrition	I know where food comes from. I know the different groups on an 'eatwell' plate. I know that everyone should eat at least 5 portions of fruit and veg a day. I know how to use the principles of a healthy and varied diet to prepare dishes. I know how to evaluate a dish based on its tastes & texture. I know people like and dislike different	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. I know how to prepare and cook a variety of predominantly savoury dishes. I know how to use a range of cooking techniques.

	food because of their taste and texture. I know basic hygiene rules for preparing food.		
Mechanisms	I know how to use axels and wheels to make my product move. I know how to use levers, linkages and sliders to make my product move.		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.
Textiles	I know how to shape and cut textiles. I know how to use a needle and thread to join material. I know how to finish my textile product. 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 make my textile structure strong and stable.	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.	
Structures	I know how to reinforce my structure so it is strong and stable.	I know what a free-standing structure is. I know that structures are stronger when they have a wider base.	I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure. I know that triangles create a strong structure.
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.	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.
Programming		I know how to program and control my product using a Microbit.	I know how to program, monitor and control my product using a Microbit.
Cutting and shaping	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	I know how to cut and shape my product using a craft knife. I know how to use knives for chopping	I know which kitchen equipment to prepare my food most effectively before cooking.

	accurately. I know how to use scissors for cutting accurately. I know how to chop, grate and peel ingredients safely with supervision.	safely and independently. I know how to use a pattern piece to accurately cut my material. I know how to use different stitches to join materials. I know how to add a zip to join my material.	I know how to use a saw for cutting safely, effectively and independently.
Joining	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 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 corners using card triangles. I know how to join material to wood using pins or staples. I know how to join linkages using split-pins.	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.
Finishing	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. I know that I need to finish my product neatly.	I know that I need to finish my product to a high standard to please my audience. 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.	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.
Communicating Ideas	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.	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.	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.

Skylark Class

	Enquiry 1	Enquiry 2
Year A	**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. **Science link objectives** - Animals including humans: Describe the importance for humans of eating the right amounts of different types of food.	**Audience:** Children under 5 – local playgroup **Product:** moving toy car **Purpose:** to entertain children under 5 **Technical knowledge:** Mechanisms: I know how to use axels and wheels to make my product move. **Tools and Equipment:** Wooden rods Cardboard wheels Dowel axels Cardboard, paint, pens and stickers for finishing **Communicate idea through:** I know how to communicate my idea through talking and online images.
Year B	**Audience:** My family **Product:** hanging decoration **Purpose:** to decorate the Christmas tree at home **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 strong and stable. **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. **Communicate idea through:** I know how to communicate my idea through talking and drawing.	**Audience:** Whole School (Worship) **Product:** moving drawing **Purpose:** to tell a story **Technical Knowledge:** Mechanisms: I know how to use levers, linkages and sliders to make my product move. Structures: I know how to reinforce my structure so it is strong and stable. **Tools and Equipment:** Scissors for cutting and shaping, Paper and card for levers and sliders Split pins for joining, Cardboard and tape for structure, Pens for finishing **Communicate idea through:** I know how to communicate my idea through talking and mock-ups.

Goldfinch Class

	Enquiry 1	Enquiry 2
Year A	**Audience:** Skylarks 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 cross-sectional diagrams. **Science link objectives** – 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.	**Audience:** Local Care Home residents **Product:** Healthy balanced main course dish **Purpose:** To encourage the residents of the care home to eat a healthy, balanced 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. Science link objectives – Animals including humans: Identify that animals, including humans, need the right types and amount of nutrition, and that they get nutrition from what they eat.
Year B	**Audience:** Swallows class **Product:** shadow puppet theatre **Purpose:** to entertain children under 5 **Technical knowledge:** **Structures:** I know what a free-standing structure is. I know that structures are stronger when they have a wider base.	**Audience:** Ages 8-11 **Product:** a pencil case **Purpose:** to hold their pencils and pens securely **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.

	Tools and Equipment: Cardboard Box Craft knives for cutting Pins or staples for joining material to box White cotton sheets Lollipop sticks and card for puppets Split pins for joining linkages Felt-tip pens and material for finishing e.g. wool for hair, curtain material. **Communicate idea through:** I know how to communicate my idea through discussion and annotated sketches. **Science link objectives** – 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. Find patterns in the way that the size of shadows change.	I know how to use pattern and seam allowances. **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. **Communicate idea through:** I know how to communicate my idea through discussion. I know how to create an annotated sketch of my idea.

Swift Class

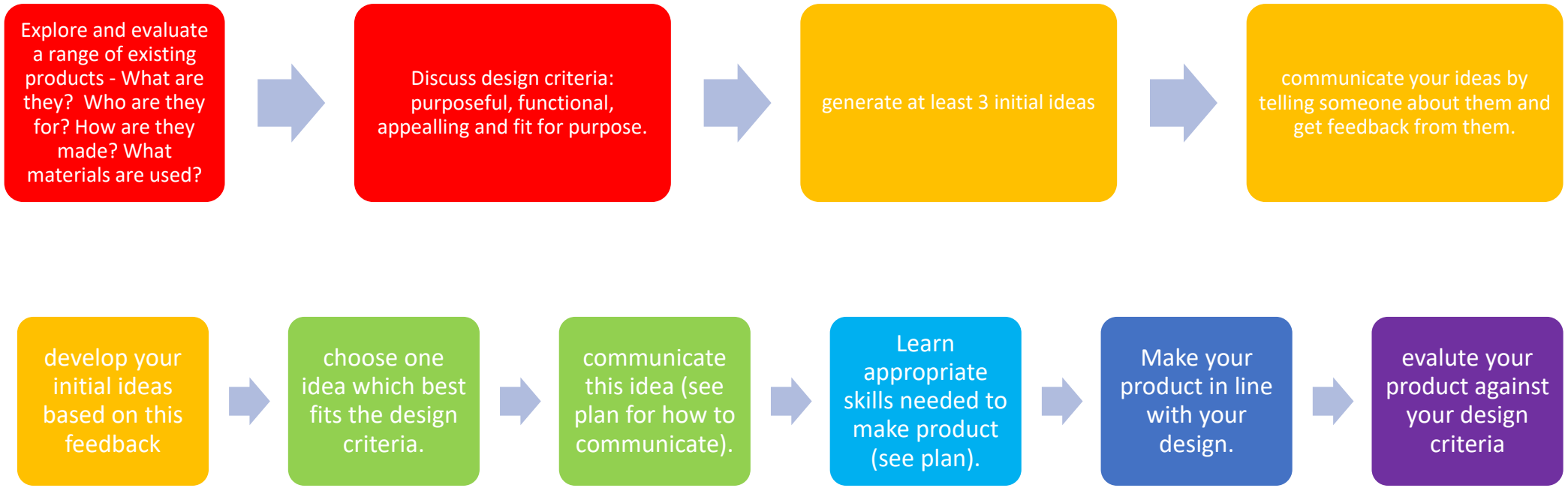
	Enquiry 1	Enquiry 2
Year A	**Audience:** Birdwatchers **Product:** camouflaged bird-hide **Purpose:** to shelter a group of people whilst they watch birds in the wild. **Technical Knowledge:** **Structures:** I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure. I know that triangles make a strong structure. **Tools and Equipment:** Tarpaulins Bamboo canes Cane joiners String for joining Straws for protoypes 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.	**Audience:** School staff **Product:** seasonal three-course meal **Purpose:** To encourage the staff members to eat a seasonal diet. **Technical Knowledge:** Cooking & Nutrition: 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.
Year B	**Audience:** Henry V army **Product:** catapult **Purpose:** to destroy the enemy **Technical knowledge:** **Mechanisms:** I know the different types of lever and how they work. I know how to adjust my lever to make my product move effectively. **Tools and Equipment:** I know how to use a saw for cutting safely, effectively and independently. Wood, dowel, elastic band, saws, drill, bench hooks and g clamps for sawing, goggles. **Communicate idea through:**	**Audience:** NASA **Product:** Mars Rover prototype motorised vehicle using microbits to program. https://www.tts-group.co.uk/blog/2016/11/02/pulley-motorised-vehicle.html **Purpose:** to drive on the surface of mars **Technical knowledge:** **Structures:** I know how to strengthen a more complex structure. I know how to stiffen and reinforce a more complex structure. I know that triangles make a strong structure. I know how to use a saw for cutting safely, effectively and independently. **Mechanisms:** I know how to make wheels and axels move efficiently.

	I know how to communicate my idea through discussion and exploded diagrams. **Science link objectives** – forces: To recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	**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. **Programming:** I know how to program, monitor and control my product using a microbit. **Tools and Equipment:** Wheels and axels Wooden rods Batteries and motor Electrical circuit Strengthening corners. **Communicate idea through:** I know how to communicate my idea through discussion and computer-aided design. www.tinkercad.com **Science link objectives** – 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 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).

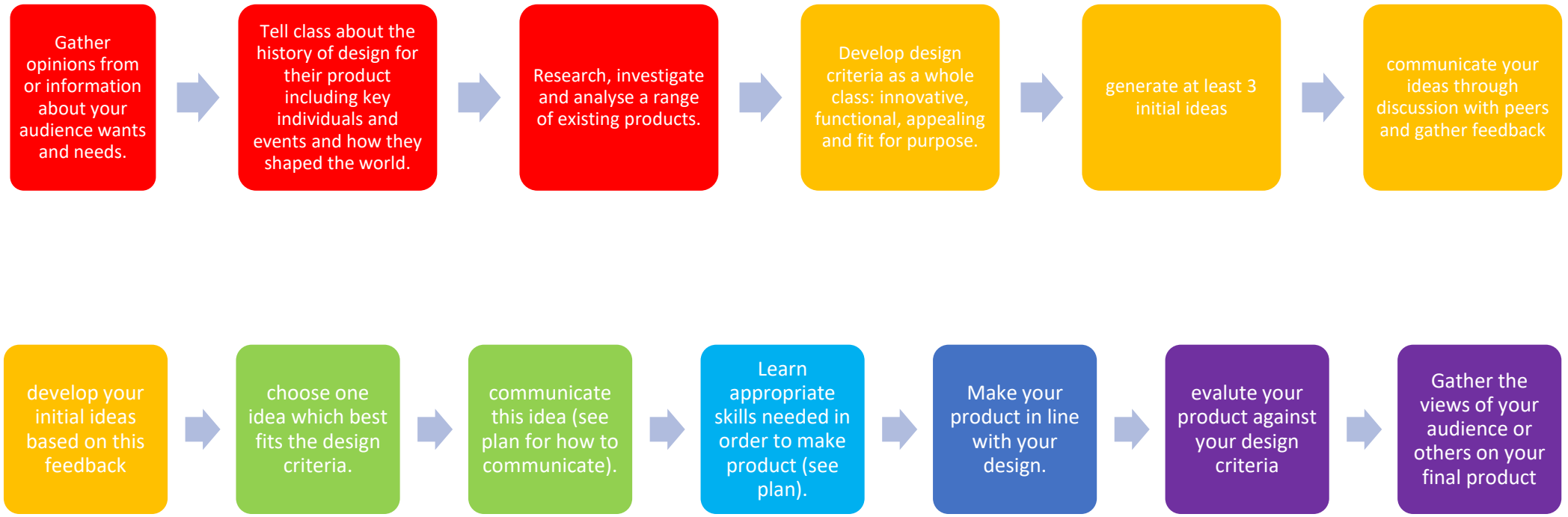
To ensure progression in designing, making and evaluating across Key Stage 1 and 2, these small steps enquiry sequences will be followed to meet the following objectives:

I know what my audience wants and needs, I know a range of existing products, I know the design criteria for my product, I know how my idea fits the design criteria, I know how to make my product in line with the design criteria, I know how my product met the design criteria.

Enquiry Sequence Skylark Class



Enquiry Sequence Goldfinch Class



Enquiry Sequence Swift Class