

**EVERY
CHILD**

Belonging
Nurture
Safety



**EVERY
CHANCE**

Opportunities
Inclusive
Adapt

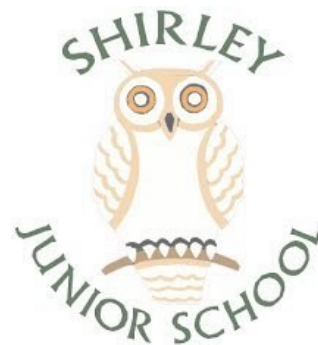


**EVERY
DAY**

Understanding
Consistent
Ambitious



Design Technology at Shirley Junior School



**KINDNESS.
RESPECT.
INTEGRITY.**

VISION

Shirley Junior School **design engineers** use the design process to create innovative products.

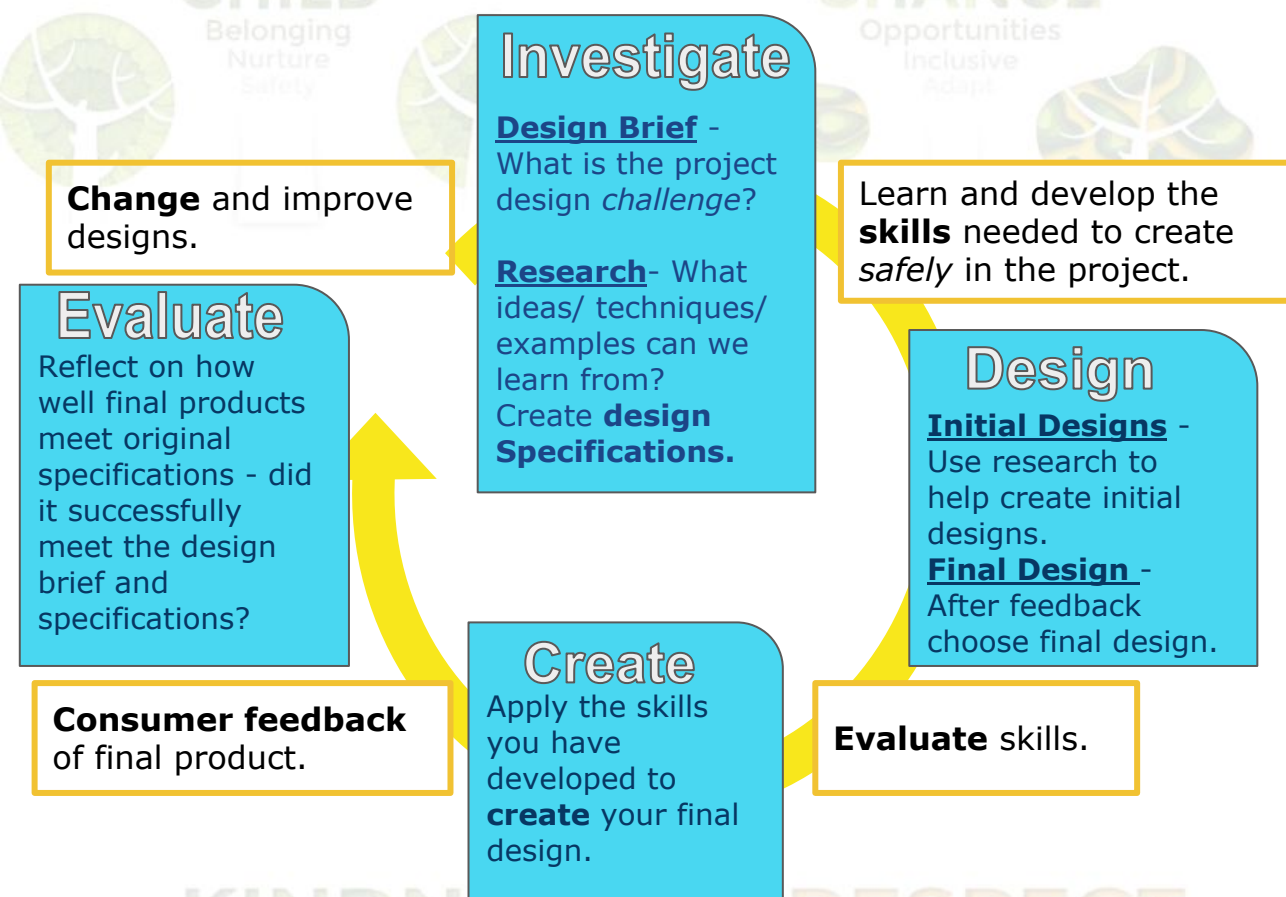
Drawing on *wider subjects*, such as maths and science, engineers **investigate** ways to reimagine existing products, using consumer **research** to draw up relevant **specifications**. Designers communicate and **evaluate** ideas to **create** products which are fit for purpose.

This enables them to develop practical *life skills* such as cooking, sewing and cutting.

Shirley Junior School design engineers know the *impact of innovation* and reflect on current world issues when making decisions about their own products.



Approach to Design Technology



Design technology is taught through the design process:

1. **Investigate** - children research key products/events that support their understanding of the **design brief** and create their own **design specifications** using their **research**.
2. **Skills** - technical skills and knowledge are explicitly taught and practised ready to be applied when making. This include how to be safe.
3. **Design** - children create initial designs and evaluate against specifications/consumer feedback before creating a final design.
4. **Create** - children apply technical knowledge to create their final designs. Choosing their materials and tools to create with.
5. **Feedback** - consumer/target markets feedback on effectiveness.
6. **Evaluate** - Evaluation against design specifications and brief. Development of final product/designs in light of feedback and evaluation.

Disciplinary knowledge progression

	R	1	2	3	4	5	6
Investigate	To begin to choose appropriate materials for a design.	To choose appropriate materials for a design. To investigate different options for design.	To use consumer feedback to design.	To use consumer feedback to create a specification.	To use target market feedback to create some specification points.	To use target market feedback to create a specification	To use ergonomics information to create specifics for a design specification.
Design	To construct a model for design.	To use pictures and key words.	To annotate a design with labels.	Create a design from different angles.	To include a zoom element in their design	To draw a design from different angles and include a zoom element	To create a scaled design
Create	To use appropriate tools. To choose appropriate materials.	To begin to choose and use appropriate tools and methods.	To choose and use appropriate tools and methods.	Begin to choose an appropriate method to join materials.	To choose an appropriate method to join materials	To demonstrate a way to strengthen joins	Apply their understanding of how to strengthen, and reinforce joins within their design.
Evaluate	To say what I like about their product.	To recognise what I have done well and what I found tricky.	To recognise what I would improve about my product.	To evaluate how well I completed my skill Begin to compare the final product to the final design.	To evaluate how well the final design links to the specification.	To evaluate how their product is fit for purpose	Evaluate how the product is fit for purpose commenting on ergonomics and aesthetics.
Vocabulary	Vehicle Emergency Feature Model Construction Join Build Evaluate	Design Investigate Join Build Materials Evaluate	Design Investigate Join Build Materials Evaluate Target Market	Design Brief Specification Design Angles Join Materials Method Evaluate Skill Final Design	Design Brief Specification Target Market Zoom Join Materials Method Evaluate Skill	Design Brief Specification Target Market Strengthen Aesthetics Evaluate	Ergonomics Aesthetics Design Brief Specification Target Market Strengthen Reinforce Evaluate

Technical Concepts

Safety and Hygiene

-how to keep safe whilst working practically.

Materials

*-Structures
and Joining*

Mechanisms

*-Electrical
and
mechanical
systems*

Cooking and Nutrition

*-Cooking
skills and
ingredients*

CAD

*-Computer
Aided
Design*

Technical knowledge progression		Year 3	Year 4	Year 5	Year 6
Materials	Structures	Select materials for purpose Create a structure encase a mechanism	To begin to understand how frames support systems (mechanical) stability.	Design and make frames that are stable for mechanisms and encase for aesthetics. To cut wood accurately to nearest mm.	To design and make accurate scaled nets, handles and functional.
	Joining	Choosing every adhesives to joi	Sewing joining materials	Reinforce weak points	Select joining method - strengthen/reinforce
Mechanisms	Electrical systems	Create a series circuit Create a switch made for purpose.			To create circuits that employ a number of components (e.g LEDs, buzzers, transistors)
	Mechanical systems	Begin to use mechanical systems in products (pneumatics, linkages, levers)	Begin to understand that mechanical systems have an input and output. Use Lever action	Use a Cam system to make and up and down mechanism To use gears and pulley systems in designs. To cut wood accurately	
CAD (Computer Aided Design)		Auto cad - 2d design Google Drawings		TinkerCAD - 3D design	TinkerCAD - 3D scaled design
Cooking and Nutrition	Cooking skills	To safely prepare fruit and vegetables - chop - bridge hold, claw grip, blend	To safely prepare fruit and vegetables - peeling, grating (previous knife holds) To use a range of techniques including peeling, grating and mixing.	To prepare and cook savoury dishes safely and hygienically, including use of a heat source. To knead and bake (apply previous mixing skills)	To prepare and adapt dishes to change the appearance/texture/taste and aroma.
	Ingredients	Fruit and vegetables	World food	Seasonality	Raw materials
Key Events and Individuals		David Misell Shaduf	Sustainable fashion Roman Onager	Roller coaster design (golden age of coasters) Curiosity - Mars Rover	LUSH - ethics in design

Overview

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
Y 3	Healthy Me! <i>Cooking and Nutrition - healthy smoothie design</i>		Let it Shine! <i>Materials - creating a case structure, selecting materials for a purpose</i>	STEM - irrigation systems - Shaduf - KS1 structures (sliders, axels, linkages) apply	Ground Force <i>CAD - calm garden design -Autocad intro</i>	Ground Force <i>Mechanisms</i>
			<i>Mechanisms - Switch as a mechanism</i>			
Y 4			Roman Invasion <i>Mechanisms - Lever actions</i>	Rags to Riches STEM - properties of materials		Wild! Food - <i>World(S.America) - peeling, grating, mixing</i>
			<i>Materials - Role of a frame</i>	<i>Materials - joining, sewing</i>		
Y 5	Space Roamers <i>CAD - 3D TinkerCAD design</i>	A Kingdom United? <i>Cooking and Nutrition - traditional bread recipes - kneading/baking</i>		STEM - Flood resistant housing - Structures, materials apply		All the fun at the fair <i>Mechanism - Cams, gears and pulleys</i>
						<i>Materials - strengthen</i>
Y 6	STEM - tbc 2023	A Fair Winter for All <i>-Materials - box design</i>				It's a wrap <i>Mechanisms - Electrical systems</i>
		<i>CAD - box design,scaled design</i>				