Design and Technology
Year 6

Autumn
Make, do and mend
Design and Technology

Previous learning

Previous years skills and knowledge will support children in year 6 to create more complex designs, honing their tool and craft skills. Children have also learnt how to incorporate a variety of mechanisms from pulleys to pneumatics. This year they will build on these skills to design and create objects that have a purpose and use of an electrical circuit. The children have developed the skills to create designs that meet the design brief, that are appealing and can edit their design throughout the process.

Substantive Knowledge	**Disciplinary knowledge**
Children from Patrington Primary Academy will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.	By the end of Key Stage Two, children at Patrington Primary Academy will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.

Lesson 1	**Technical Knowledge**
	• To understand that people's lives have been improved in countless ways due to new inventions and designs. For example The Morrison Shelter, designed by John Baker in 1941, was an indoor air-raid shelter used during WW2. It saved lives of many people caught in the bombing. • To understand that mechanical systems can include sliders, levers, linkages, gears, pulleys, cams, pneumatics and hydraulics. • To understand that design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided designs. • To understand that precision is important in producing a polished finished product.
Lesson 2	**Technical Knowledge**
	• To understand that design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured and explaining these evaluations to others can help refine it. • To understand that computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors. • To understand that computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph.
Lesson 3	**Design**
	• Develop a design criteria for a functional and appealing product that is fit for purpose, communicating ideas in a range of ways. • To use sensors to monitor an environmental variable such as temperature, sound or light. • To pick the correct selection of tools and careful measurements can ensure the parts fit together correctly.
Lesson 4	**Make**
	• To be able to explain and use mechanical systems in their products to meet the design brief. • To understand and use electrical circuits that incorporate a variety of components and use

	programming to control their products.
Lesson 5	**Evaluate**
	● Analyse how an invention or product has significantly changed or improved people's lives. ● Demonstrate modifications made to a product as an evaluation by themselves and others.

Vocabulary	**Sticky Knowledge**
Functionality, design criteria, design decisions, prototype, reinforce. Rotation, spindle, mechanical system, rotary, linear.	

Year 6: Spring
Bridge Building Challenge
Design and Technology

Previous learning

Previous years skills and knowledge will support children through this project in planning and preparing healthy, well portioned and local foods. Children have learnt how to choose appropriate tools and use them safely. Children have developed an understanding of what a balanced diet is and how to keep their bodies healthy. Their previous knowledge and skills will support them to design more challenging and enhanced meals.

Substantive Knowledge	**Disciplinary knowledge**
Children from Patrington Primary Academy will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.	By the end of Key Stage Two, children at Patrington Primary Academy will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.

Lesson 1	**Technical Knowledge**
	● To understand that design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer aided designs. ● To understand that precision is important in producing a polished finished product. ● To understand that design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured and explaining these evaluations to others can help refine it.
Lesson 2	**Technical Knowledge**
	● To understand that strength can be added to a framework by using multiple layers. For example corrugated cardboard can be placed with corrugations running alternatively vertically and horizontally. ● To understand triangular shapes can be used instead of square shapes because they are more rigid. ● To understand that frameworks can be strengthened by adding an outer cover.
Lesson 3	**Design**
	● Develop a design criteria for a functional and appealing product that is fit for purpose, communicating ideas in a range of ways. ● To pick the correct selection of tools and careful measurements can ensure the parts fit together correctly. ● To select the most appropriate materials and framework for different structures, explaining what makes them strong. ● To select appropriate tools for a task and use them safely and precisely. ● To choose the best materials for a task, showing an understanding of their working characteristics.
Lesson 4	**Make**
	● To be able to use their design to create a bridge including all factors from the design brief. The children will use their skills and knowledge to ensure the bridge has strength, stability, purpose and appealing.
Lesson 5	**Evaluate**
	● Analyse how an invention or product has significantly changed or improved people's lives. ● Demonstrate modifications made to a product as an evaluation by themselves and others.

Vocabulary	Sticky Knowledge
Functionality, design criteria, design decisions, prototype, reinforce	

Year 6: Summer Food for Life **Design and Technology**	
Previous learning	
Previous years skills and knowledge will support children in year 6 to create a healthy and balanced diet that uses local produce. The children have learnt about the importance of buying local, what foods are unhealthy and healthy, what contributes to a balanced diet and choices of foods in relation to their seasonality.	
Substantive Knowledge	**Disciplinary knowledge**
Children from Patrington Primary Academy will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.	By the end of Key Stage Two, children at Patrington Primary Academy will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.
Lesson 1	**Technical Knowledge**
	● To understand that ingredients can usually be bought at supermarkets, but specialist shops may stock different items. ● To understand that greengrocers sell fruit, butches sell meat, fishmongers sell fish and delicatessons. They also usually sell some prepared foods, as well as cold meats and cheeses.
Lesson 2	**Technical Knowledge**
	● To understand that eating a balanced diet is a positive diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet. ● To understand that organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. ● Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control.
Lesson 3	**Design**
	● To plan a healthy daily diet justifying why each meal contributes towards a balanced diet. This plan will contribute to the children creating their own meal. ● Explain how organic produce is grown and why they have used it in their meal plan.
Lesson 4	**Make**
	● To follow a recipe that requires a variety of techniques and sources the necessary ingredients independently.
Lesson 5	**Evaluate**
	● To evaluate if their meal met the brief, does it promote healthy eating and sources from organic and/or local produce? ● To evaluate each other's meals and discuss their opinions on the healthy meal prepared. Did

	they use a variety of tools, resources and techniques?

Vocabulary	Sticky Knowledge
fertilisers, pesticides, growth regulators, nutrition, cost, hygienic, seasonal	

Year 6: Summer **Design and Technology** **Textiles**	
Previous learning	
Previous years skills and knowledge will support children in year 6 to confidentiality use a wide range of techniques and texture to create complex and well thought through designs. The children will have covered all types of stitches and will use their design to hone their skills. The children will draw on their previous knowledge of how to combine materials and create different effects to gain the desired outcome.	
Substantive Knowledge	**Disciplinary knowledge**
Children from Patrington Primary Academy will be able to participate fully in an increasingly technological world and have an understanding of how to be critical and reflective consumers. They will be able to use their practical, creative and reflective skills to become consumers and innovators who are well informed and can use their own skills to develop products for the future.	By the end of Key Stage Two, children at Patrington Primary Academy will be able to: prepare ingredients safely and hygienically and cook nutritious food. They will be able to design their own products using a range of materials and evaluate their product against success criteria. The children will generate their own product ideas by reflecting upon existing products and then developing prototypes. Finally, in order to make successful products, the children will have a secure understanding of mechanical structures, such as: gears, pulley systems and levers.

Lesson 1	**Technical Knowledge**
	● To understand that pinning with dressmaker pins and tacking with quick, temporary stitches hold fabric together in preparation for and during sewing. ● To understand that it is important to understand the characteristics of different materials to select the most appropriate materials for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability. ● To understand that fastenings hold a piece of clothing together. Types of fastenings include zips, press studs, Velcro and buttons
Lesson 2	**Design**
	● To pin and tack fabrics in preparation for sewing and more complex pattern work. ● To choose the best materials for a task, showing an understanding of their working characteristics. ● To use different methods of fastening for functions and decoration, including press studs, Velcro and buttons.
Lesson 3	**Make**
	● To create a project that includes all aspects of their knowledge to create a complex pattern work. Including techniques and resources such a zips/buttons/Velcro, rational behind the type of fabric used and a deciding which stitch will work best for their project.
Lesson 4	**Evaluate**
	● To evaluate if their meal met the brief, does it do the job that it was designed to do. E.g if waterproof material is used, does it stay waterproof. ● To evaluate each other's projects, have they kept to the brief, have they used a wide range

	of skills, is it appealing?

Vocabulary	Sticky Knowledge
Seam, reinforce, pattern pieces, right side, wrong side embroidery, scatter, back, cross, running and blanket stitch.	