JLPS Curriculum Overview for Design Technology

Rationale

Intent

At Joy Lane Primary School, we aim to inspire creativity and problem-solving in our students through our DT curriculum. Using the PlanIt scheme of work and the 'design, make, evaluate' cycle, we guide students to think critically and work iteratively. This hands-on approach helps them develop practical skills and confidence in their abilities. We focus on making learning engaging and relevant, preparing students for future challenges by encouraging innovation and resilience. Our goal is to nurture skilled, imaginative problem solvers ready to thrive in a dynamic world.

Implementation

At Joy Lane Primary School, our DT curriculum is delivered through the comprehensive PlanIt scheme of work, ensuring a cohesive and progressive learning journey. By revisiting and consolidating skills, our DT lessons help students build on prior knowledge while introducing new skills, knowledge, and challenges. Each year group covers three units annually, ensuring continuous development of knowledge and skills. Key vocabulary is systematically introduced and reinforced in each lesson, supported by display materials and knowledge organisers for repetition and review. Comprehensive adult guides and accurate subject knowledge are provided for each lesson to ensure that teachers and support staff feel confident and well-prepared.

Central to our approach is the 'design, make, evaluate' cycle, which empowers students to think creatively, execute their ideas, and reflect on their outcomes. Our commitment to developing active, independent learners is reinforced by the 'voices for choices' initiative, a whole-school approach that promotes metacognition and encourages students to take ownership of their learning and make informed decisions. Through Joy Lane's Ready, Respectful, and Responsible behaviour policy, we instil positive behaviours, encouraging students to be prepared for lessons, respectful of their peers and resources, and responsible for their learning outcomes. We employ formative assessment strategies, such as peer and self-assessment, and utilize the Voices for Choices animals to help students reflect on their learning and identify areas for improvement. By integrating these principles, we create a dynamic and supportive environment where students are encouraged to innovate and excel in DT, nurturing skilled, thoughtful, and responsible individuals prepared for future challenges.

Impact

As a result of our broad DT curriculum, children at Joy Lane Primary School exhibit confidence, a love for learning, and a passion for creativity. They demonstrate resilience and self-regulation, becoming independent and ambitious learners who are inspired to solve problems and explore their interests. Our inclusive approach fosters a community where learners value and respect others, embodying British values and becoming confident and curious individuals. The impact is evident in their ability to apply skills and knowledge creatively, inspiring a lifelong love for learning and a readiness to contribute positively to society.

National Curriculum

Purpose of study

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims

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.

Subject content

Key stage 1

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable
- explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.

Key stage 2

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making.

When designing and making, pupils should be taught 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
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately

- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

Cooking and nutrition

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

Pupils should be taught to:

Key stage 1

- use the basic principles of a healthy and varied diet to prepare dishes
- understand where food comes from.

Key stage 2

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality and know where and how a variety of ingredients are grown, reared, caught and processed.

Early Years

Area of Learning: Expressive arts and design

Birth to three:	**3 and 4 year olds:**	**Children in Reception:**
Explore different materials, using all their senses to investigate them. Manipulate and play with different materials. Use their imagination as they consider what they can do with different materials. Make simple models which express their ideas.	Explore different materials freely, to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	Explore, use and refine a variety of artistic effects to express their ideas and feelings. Return to and build on their previous learning, refining ideas and developing their ability to represent them. Create collaboratively, sharing ideas, resources and skills.

Early Learning Goals:

Creating with Materials:

- safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
- Share their creations, explaining the process they have used

	Designing	**Making**	**Evaluating**	**Technical skills**	**Food technology**
Nursery	Develop own ideas & decide which materials to use to express them	Use various construction materials, e.g. joining pieces, stacking vertically and horizontally, balancing, making enclosures and creating spaces Use available resources to create props or creates imaginary ones to support play	Notice what other children & adults do, mirroring what is observed, adding variations & then doing it spontaneously	Develop new skills & techniques Use tools for a purpose	Talk about the differences between materials & changes they notice Make healthy choices
Reception	Children will ask 'who', 'what', 'when', 'where' and 'why' questions. Make comments about what they have heard and ask questions to clarify their understanding	Children will know what junk modelling is and how they can use different glues and tapes to join and create Children will be able to use construction kits and loose parts to build walls, towers and frameworks	Children will know and evaluate a range of warm, cold and waterproof fabrics	Children will be able to use tools safely Investigate suitable ways to join fabric	Children will be able to experience the appearance and taste and smell of common fruit and vegetables. Cutting fruit and vegetables using appropriate tools

Key Vocabulary

Design Picture	Make Experiment	Evaluate Materials	Technology Tape	Cook Food

Drawing Use	Change Tools Materials Use	Use Idea Improve	Record Video Photograph Computer	Meal Snack Healthy Diet

Year 1

DT Units

Term 1/2	Term 3/4	Term 5/6
Dips and Dippers In this unit the children will learn about good food hygiene rules and how to use kitchen equipment to prepare food safely. Children will apply their skills when making and evaluating a healthy dip and dippers. the unit develops children's understanding of the eat well place and explains the importance of eating a healthy and varied diet. By the end of this unit all children should be able to: • Explain ideas about how to eat a healthy and varied diet. • Give a simple evaluation of a product by explaining their likes and dislikes. • Use kitchen equipment safely and prepare dishes.	**Fabric Faces** In their unit, the children will learn about different fabrics. They will explore and become familiar with the names of different fabrics and learn how to choose and manipulate fabrics to create different effects; they will also learn how to join fabrics in a variety of ways. Running stitch will be introduced during this unit. Finally, children get the chance to apply all these skills to help them create their own fabric face which they will evaluate. By the end of this unit all children should be able to: • Create a template. • Create a simple design to explain what they intend to do. • Create a fabric face with support by joining pieces of fabric together and add features using appropriate materials and techniques.	**Moving Pictures – Traditional Tales** This unit give children opportunities to develop their understanding of mechanisms. Children listen to and role play different Traditional Tales and then learn how sections of the stories can be made into a moving picture. Following instructions on how to make different types of mechanisms, such as levers, wheels and sliders, gives children experience and information to draw on when developing their own ideas. They sketch a design based on their ideas and then create their moving picture centred on the story of 'The Three Billy Goats Gruff.' Children evaluate their finished product. By the end of this unit all children should be able to: • Explore an existing product. • Draw a simple design. • Make a picture which has at least one moving mechanism. • Start to understand what design criteria is used for. • Evaluate what they did well on their product.

Key Vocabulary

dip dipper method appearance texture taste	fabric join cut tools textiles evaluate	lever slider wheel pivot push pull

Year 2

DT Units

Term 1/2	Term 3/4	Term 5/6
Sensational Salads In this unit, children will learn about peeling, zesting, cutting safely and applying these skills when preparing healthy dishes. Children will learn key information about healthy eating and where their food comes from. They will gain some practical ideas about ingredients that can be combined to make interesting and healthy salads. By the end of this unit all children should be able to: • Know how to eat a healthy and varied diet. • Use the basic principles of a healthy diet to prepare dishes. • Follow a simple recipe with some guidance. • Work with close adult supervision to use measuring spoons, zesters and juicers to prepare dishes. • Understand that some food is grown, and some food is caught.	**Fabric Bunting** In this unit, children will learn about working with fabric. They will start by evaluating a range of existing bunting. Children will then set a design criteria. They will learn how to use a graphics program to create a design and template for their bunting. Working with felt, children will cut out a bunting shape and use a simple running stitch. Children will be given the chance to explore different fabrics that they could use to enhance their designs. Using techniques such as sewing, stapling and gluing, children will decorate their felt flag. Finally, children will evaluate their product. By the end of this unit, all children should be able to: • Judge existing products on a simple scale. • Use a graphics program to create a simple design. • Work with support to cut out a fabric shape. • Start to demonstrate how to create a basic stitch. • Decorate a piece of fabric.	**Pirate Paddy's Pack Lunch Problems** The Pirate Paddy's Packed Lunch Problems unit gives children the opportunity to develop their understanding of structures. The exploration of different types of lunch boxes gives children the experience and information to draw on when developing their own ideas. The children create their ideas following the design criteria, given at the beginning of the project, and go on to create models from reclaimed materials. Children gain a basic understanding about how structures can be made stronger, stiffer and more stable. At the end of the unit, children test their product and suggest further improvements. By the end of this unit, all children should be able to: • recognise the positives about an existing product and any problems. • draw a simple design. • with support, build a structure for their lunch box. • test their own product.

Key Vocabulary

fruit vegetable slice grate blend recipe	design bunting template trace running stitch thread	product disassemble waterproof protect structure hinges

Year 3

DT Units

Term 1/2	Term 3/4	Term 5/6

Juggling Balls In this unit, children will learn how to make juggling balls. They will start by exploring and evaluating different juggling balls. Children are given a design brief, asking them to make a circus themed juggling ball. By the end of this unit all children will be able to: •Investigate a range of existing products. •Develop a design based around a design criteria. •Use appropriate techniques to decorate fabric. •With support create a hem using a running stitch and join fabrics using an overcast stitch.	**Let's Go Fly a Kite** In this unit children will be given opportunities to develop their understanding of the frame structures and how they can be strengthened and stiffened. Children will gain knowledge and understanding about the parts and shapes of kites. By the end of this unit, all children will be able to: • Explain how Homan Walsh used a kite to help build the Niagara Falls Bridge. • Use research into the shape and parts of kites to develop simple design criteria. • Build simple frame structures.	**Edible Gardens** In this unit children will learn where and how a variety of ingredients are grown. They will also learn how to cook with ingredients and follow recipes using different kitchen equipment. By the end of this unit all children will be able to: •Understand the Eatwell Guide and know which foods they should be eating more and less of. •Understand and know where and how a variety of ingredients are grown. •Prepare ingredients safely and hygienically using appropriate kitchen utensils.
Key Vocabulary		
design criteria evaluate interpret tie-dye overcast stitch hem functional quality analysis	kite bridle tow point keel sail spars tail delta rokkaku	herbs rosemary, mint, tarragon, thyme, parsley complex carbohydrates vitamins minerals polytunnel calyx pollinate boil/simmer
Year 4		
DT Units		
Term 1/2	Term 3/4	Term 5/6
Mechanical Posters In this unit children will develop their understanding of mechanical systems. They will sketch a design based on their own ideas, make a prototype and then create their 'Lever and Linkage Poster'. Finally, the children will evaluate their product. By the end of this unit, all children will be able to: • Explore mechanical systems. • Draw a simple annotated design. • Start to generate ideas for design criteria. • Make a prototype and finished poster which has at least one lever/ linkage mechanism. • Evaluate what they did well on their product and things they could improve.	**Battery Operated Lights** In this unit children will consolidate their knowledge and understanding of electrical systems and develop understanding about series and parallel circuits and different types of switched. They will apply their knowledge by designing and making a battery-operated light that will be controlled by a homemade switch. By the end of this unit, children will be able to: • Explain how technology has helped shaped the world we live in. • Explore and make a series and parallel circuit and follow instructions to make a switch. • Draw a simple annotated design. • Write their own simple design criteria. • Make a product which contains a working circuit to light a bulb. • Use a series of given questions to evaluate their product.	**The Great Bread Bake Off** In this unit the children will learn about working with food. They will learn about the history of bread production and investigate and evaluate bread products. They will create a design criteria and design, make and evaluate their own bread product. Children will use a range of skills and techniques using simple kitchen tools and learn how to knead dough and prove bread. By the end of this unit, children will be able to: •Design and make a bread product with support and guidance. •Explain why choices were made after discussion with the teacher. •Have demonstrated some skills when making the product.
Key Vocabulary		
mechanism lever pivot motion input/output guides/bridges linkage prototype replicate	engineering inventors electrical system conductor insulator components turn switch microswitch cross-section	pioneer product market research knot yeast knead dough rise ingredients
Year 5		
DT Units		
Term 1/2	Term 3/4	Term 5/6
Super Seasonal Cooking In this unit, children will learn about the importance of buying seasonal food and where, when and how a variety of ingredients are grown, reared, caught and processed. Children will sample some seasonal food, design their own balances meal and evaluate their product. By the end of this unit, all children will be able to: •Understand what seasonality means. •Name some foods which are grown, reared, caught and processed. •Design simple seasonal recipes. •Prepare a range of ingredients hygienically. •Prepare, assemble/cook ingredients.	**Marbulous Structures** In this unit, children will develop their understanding of more complex free-standing structures and how they can be strengthened and reinforced. Children will learn how to join and shape materials, use an iterative design process to create their marble runs and test and evaluate their marble runs. By the end of this unit, all children will be able to: •Explore existing free-standing structures and explain what gives them strength, reinforcement and stability. •Select tools and equipment to join card together. •Design and build a simple marble run. •Improve their work.	**Felt Phone Cases** In this unit, children will learn how to write their own design criteria and design a product, thinking about a user, aesthetics and functionality. They will create annotated designs and step by step plans and learn how to make a paper template. They will also learn how to sew using a variety of stitches. By the end of this unit, all children will be able to: •Develop their own design criteria. •Use backstitch. •Create simple patterns.
Key Vocabulary		
seasonality sustainable	free-standing sturdy	specification functionality

imported reared/caught processed asparagus, kale, spinach protein balanced diet refine (recipes)	reinforce reposition stiffen stable aesthetics functional iterative process	innovative design process precise centimetre/millimetre whip stich back stitch blanket stitch
Year 6		
DT Units		
Term 1/2	Term 3/4	Term 5/6
Programming Adventure In this unit children will apply their understanding of computing to program a floor robot. They will explore a range of maps and use these to create original designs. Children will research how floor robots move along different types of materials and create obstacle squares. They will then test and evaluate their obstacles. By the end of this unit, all children will be able to: •Understand how a floor robot moves; •Program it accurately to move along a given route; •Explore and select from a range of different materials to create obstacle squares.	**Automata Animals** In this unit, children will develop their understanding of mechanical systems. They will learn about controlling movement with a cam mechanism as part of an automate animal. They will create a design criteria and design based on research they have carried out. They will learn to make simple cam mechanism as well as cutting shaping, joining and combining components using tools and equipment. By the end of this unit, all children will be able to: • Generate, as a group, one viable idea after discussion with the teacher. • Cut materials accurately and safely by selecting appropriate tools. • Assemble a simple cam mechanism as part of the design. • Use tools with some accuracy and finish their automata animal in a design that they have prepared with some assistance. • Use design criteria to evaluate what they did well on their product.	**Global Food** In this unit, children will discover the exciting and diverse choice of food around the world. They will learn where in the world a variety of ingredients flourish, how to build an Eatwell plate, and develop an understanding of how extremely varied foods can still come under the same basic food groups. They will learn some basic and more advanced cooking techniques and apply these skills when making traditional dishes from different countries. By the end of this unit, all children will be able to: •Name some varied ingredients and say which part of the world they come from. •Explain the different food groups on the Eatwell plate. •Follow a simple recipe. •Use some basic food skills, such as grating and chopping, which enable them to prepare a variety of simple savoury dishes.
Key Vocabulary		
floor robot/bee-bot adventure maps obstacles materials/properties planning programming monitoring design criteria evaluating	endangered vulnerable research components rotary convert ellipse offset framework	global climate carbohydrates starchy fruit food groups nutritional Mexican quesadillas Chinese spring roll German pretzel