



JLPS Curriculum Overview for Design Technology

Rationale

Design and Technology is about providing opportunities for students to combine designing and making with knowledge and understanding of the process and their audience in order to create quality products.

At Joy Lane Primary School, DT offers opportunities for children to develop their skills and knowledge in design, structures, mechanisms, electrical control and a range of materials, including food. The exciting projects and opportunities on offer enable and encourage children's independence and creativity while reflecting on important issues. We feel it is vital to nurture creativity and innovation through design and explore the designed and made world in which we all live and work, enabling and encouraging children to constantly reflect through a 'plan, do, review' cycle. DT also allows our young explorers to acquire and apply Maths and English skills in a fun, practical way, putting these subjects into context and making them easier to digest and understand. The subject also links closely with Art and Science and enables children to utilise creative thinking and problem solving skills, while developing a strong understanding of health and safety.

We recognise and value the characteristics that children display when they are learning effectively, and DT provides a variety of opportunities for children to seek and be motivated by a challenge, pay attention to detail, persist when challenges occur, make links and bounce back after difficulties. The value of these skills is of utmost importance in real life beyond the classroom, creating lifelong learners.

DT activities are taught in a variety of ways across the school, sometimes in blocks of taught time e.g. Enterprise Week or as individual lessons as part of a selected topic. DT activities are planned to ensure continuity and progression by building on the specific knowledge, skills and understanding contained in the subject profile. Engaging units of work are planned using a combination of real-life situations and cross-curricular links. Children engage with the appropriate stages of design depending on their year group and follow on to test, evaluate and edit their end products.

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. They should work in a range of relevant contexts [for example, the home and school, gardens and playgrounds, the local community, industry and the wider environment].

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. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

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:

- 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
- Make use of props and materials when role-playing characters in narratives and stories

	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 Responds imaginatively to art works & objects	Develop new skills & techniques Use tools for a purpose	Talk about the differences between materials & changes they notice Make healthy choices
Reception	Develop own ideas through experimentation with diverse materials to express & communicate their discoveries & understanding Create collaboratively sharing ideas, resources & skills	Use increasing knowledge & understanding of tools & materials to explore their interests & enquiries & develop their thinking Create representations both imaginary & real-life ideas, events, people & objects	Express & communicates working theories, feelings & understandings Return to & build on previous learning, refining ideas & developing their ability to represent them Discuss problems & how they might be solved	Use different techniques for joining materials Use tools independently, with care & precision	Look closely at similarities, differences, patterns & change Know & talk about the different factors that support their overall health & well-being

Key Vocabulary

Design Picture Drawing Use	Make Experiment Change Tools Materials Use	Evaluate Materials Use Idea Improve	Technology Tape Record Video Photograph Computer	Cook Food Meal Snack Healthy Diet
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Year 1

Design and Planning	Tools and Materials	Construction	Evaluation	Food
I use my own ideas to make something. I explain to someone else how I want to make my product.	I select from a range of materials and tools. I use basic tools safely.	I make a product that works. I make my model stronger. With help, I measure, mark out and cut materials.	I describe how well my product works.	I cut food safely. I use basic food handling and hygiene practices.

Key Vocabulary

Plan label Discuss Product Construct Materials Tools Evaluate	Tools Materials Safety Measure Cut	Product Strong Measure Mark Cut Join attach Stick	Discuss Describe Evaluate Product Move Slide Turn	Plan Design Hygiene Cut Evaluate
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Key knowledge to be acquired by the end of Year 1:

- I know how to measure, mark and cut.
- I know basic hygiene rules when handling food.
- I know different techniques to make my model stronger.
- I know basic safety rules when using tools.

Year 2

Design and Planning	Tools and Materials	Construction	Evaluation	Food
I make a simple plan with labels before making. I identify a purpose for what I intend to design and make. I identify simple success criteria.	I choose tools and materials and explain why I have chosen them. I use a range of tools safely. I explain why I have chosen specific textiles/materials.	I join materials and components in different ways. I cut materials to use in a model or structure with some accuracy.	I explain what went well with my work and what I could improve. I evaluate against the simple success criteria.	I describe the ingredients I am using. I follow safe procedures for food safety and hygiene. I can use techniques such as cutting and grating.

Key Vocabulary

Plan Design Label Purpose Use Audience Success criteria	Materials Tools Explain and discuss Safety Textiles Explain	Join Attach Score Cut Measure Accurate Model Structure Stable	Evaluate Discuss Improve Success criteria	Ingredients Instructions Plan Food hygiene Cutting Grating Chopping Slicing Food groups evaluate
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Key knowledge to be acquired by the end of Year 2:

- I know different food techniques: cutting, grating.
- I know different joining techniques.
- I know what a 'success criteria' is.
- I know the different qualities of the materials I am using.

Year 3

Design and Planning	Tools and Materials	Construction	Evaluation	Food
I make drawings with labels. I prove that my design meets some set criteria. I follow a step-by-step plan.	I choose a material for its suitability. I work safely and accurately. I select the most appropriate tools for a given task.	I measure, make holes and make cuts. I can assemble my materials effectively.	I can say what I would do differently next time and why. I evaluate against the success criteria.	I can use varied techniques such as cutting, chopping, peeling and grating. I know that we need a balanced diet to be healthy.

Key Vocabulary

Draw Design Plan Labels Step-by-step instructions Success criteria	Suitability Audience Safety Accuracy Tools Materials	Cuts Score Holes Assemble Construct Join Connect	Celebrate Evaluate Improve Success criteria	Ingredients Techniques Slicing Chopping Grating Peeling Balanced
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		Suitability		Food groups Food pyramid Seasonality
Key knowledge to be acquired by the end of Year 3:				
<ul style="list-style-type: none"> I know different food techniques: cutting, grating, chopping, peeling, slicing. I know that we need a balanced diet to be healthy, using knowledge of different food groups. I know that some tools and materials are better for the job than others. I know a range of joining techniques. 				
Year 4				
Design and Planning	Tools and Materials	Construction	Evaluation	Food
<p>I make labelled drawings from different views.</p> <p>I produce a plan and explain it.</p> <p>I evaluate other products and identify criteria for my own designs.</p>	<p>I choose a material for both its suitability and its appearance.</p> <p>I select the most appropriate tools and techniques for a given task.</p>	<p>I measure, mark out, make holes and make cuts and scores.</p> <p>I persevere when my original ideas do not work.</p>	<p>I evaluate during and after making and suggest improvements for my designs at both points.</p> <p>I evaluate products carrying out appropriate tests.</p>	<p>I know how to be both hygienic and safe when using and preparing food.</p> <p>I know that to be active and healthy, we need a balance of foods to provide energy.</p>
Key Vocabulary				
Draw Plan Label Views Perspective Explain Evaluate Product Research	Materials Suitability Audience Appearance Tools Techniques	Mark Measure Cut Score Attach Construct Persevere techniques	Evaluate Improve Test	Hygiene Prepare Food groups/pyramid Balance Varied diet Energy Healthy Ingredients Safe Nutrition
Key knowledge to be acquired by the end of Year 4:				
<ul style="list-style-type: none"> I know the difference between a cut, hole and score. I know and can apply the principles of a healthy and varied diet. I know how to be both hygienic and safe when using food. I know how to test my product against the success criteria. I know possible ways a product might be improve or adapted. 				
Year 5				
Design and Planning	Tools and Materials	Construction	Evaluation	Food
<p>I come up with a range of ideas after collecting information from different sources.</p> <p>I produce a detailed step-by-step plan with drawings, labels and equipment.</p> <p>I explain how my product will appeal to a specific audience.</p>	<p>I use a range of tools and equipment competently.</p> <p>I can list the appropriate tools and equipment as part of the design process.</p>	<p>I follow my plan carefully to make a working product.</p> <p>I persevere and adapt my work when my original ideas do not work.</p>	<p>I evaluate appearance and function against original criteria.</p> <p>I evaluate personally and seek evaluation from others.</p>	<p>I show I can be both hygienic and safe in the kitchen.</p> <p>I know that food and drink contain different nutrients.</p>
Key Vocabulary				
Variety Research Sources Step-by-step plan Labels Equipment Product Audience Appeal Suitability	Tools Equipment Appropriate Suitability	Plan Persevere Join Construct Adapt	Evaluate Discuss Success criteria Function	Hygiene Safety Nutrition Ingredients Cooking Food groups Varied diet
Key knowledge to be acquired by the end of Year 5:				
<ul style="list-style-type: none"> I know that food and drink contain different nutrients. I know the processes needed to create a product to appeal to my audience. I know the tools and materials suitable for my product. 				
Year 6				
Design and Planning	Tools and Materials	Construction	Evaluation	Food
<p>I use market research to inform my plans, research and design criteria.</p> <p>I plan the order of my work including how to use materials, equipment and processes.</p>	<p>I select appropriate tools, materials and components during the planning process.</p> <p>I can adapt the use of my tools and materials when making, giving a reason why.</p>	<p>I follow and refine my plans as I work on construction.</p> <p>I achieve a quality product.</p> <p>I construct products using secure joining techniques.</p>	<p>I show that I can test and evaluate my own and others' products.</p> <p>I evaluate my product against a clear criteria and suggest valid improvements.</p>	<p>I can be both hygienic and safe when preparing food, especially if using a heat source.</p>

I justify my plans in a convincing way.			I record evaluations with drawings and labels.	
Key Vocabulary				
Market Research Function Suitability Plan Diagram Sketch Success criteria Materials Techniques Tools Process Justify	Tools Materials Components Plan Process Adapt select Justify	Refine Construct Quality Join Techniques Tools Materials Score Cut Stable Strong	Evaluate Test Product Improve Record	Hygiene Varied diet Food groups Cooking Techniques Safety
Key knowledge to be acquired by the end of Year 6:				
<ul style="list-style-type: none"> • I know what market research is and how to use it to create a product. • I know how to present my product in an interesting way. • I know how to evaluate my own and others' products, considering strengths, weaknesses and next steps. 				

