Design and Technology Curriculum Intent

At Linden Road Academy, our pupils experience a Design and Technology curriculum, which allows them to explore their creativity through designing and making. We teach pupils the technical knowledge and understanding they need in order to create effective and appealing products.

Key declarative and procedural knowledge is taught progressively and is embedded to ensure that all pupils make progress and develop as they journey through school.

In our Foundation Stage, the children are taught to explore and use a variety of materials and media to represent their ideas, thinking about their uses and purposes. The children are exposed to a variety of tools and techniques to use, experimenting with colour, design, texture, form and function. The children in Foundation Stage are also given regular opportunities to develop understanding of a technological world. Looking at technology from the past and present and how they have influenced our lives today. This progresses throughout school to encourage the children to have a critical approach to their own designs and creations.

The teaching of Design and Technology follows a lesson sequence of: Research, Design, Skills Burst, Application of Skills and Evaluation. We teach DT throughout the year – ensuring that DT is a feature of every term. Links with science and topics ensure that opportunities to connect the curriculum are enhanced, recapped and consolidated.

Within our curriculum, children are also taught about 'Cooking and Nutrition', exploring 'Where food comes from' as well as following a recipes to make and eat food. This knowledge forms the foundations of the Science curriculum, where pupils further explore where food comes from and plant growth. Children are given the opportunity to explore these objectives and create their own meal. The children understand that there are different types of food groups and understand the need for a varied diet in order to stay healthy. They are taught to be aware of how good practice with regard to exercise, keeping healthy, good sleeping habits and hygiene contribute to a healthy lifestyle. These objectives are not only covered in our Design and Technology curriculum, but are consolidated further through our PSHE scheme of learning and PE curriculum.

Our children's horizons are broadened when exposed to food across the globe and throughout different cultures. Our school celebrations of Harvest, Eid, Ramadan, Chinese New Year and many other religious festivals include a focus on food, traditions, transportation and fair trade. Design and Technology activities are also set as homework projects, linked to alternative topics. The children proudly bring these in and they are celebrated and displayed for all to see.

The impact that our Design and Technology Curriculum will have on children in Linden Road Academy will ensure that children have:

- A confident attitude to independent working.
- The ability to use time efficiently and productively.
- The ability to undertake research, showing initiative, asking questions, applying and testing knowledge and their product.
- A thorough knowledge of tools, equipment, materials and safe procedures.
- The learning behaviour of resilience.
- To make links between subjects.

When our children move into Key Stage Three, they will be well equipped with knowledge and understanding for Design and Technology. They will be confident with skills, vocabulary and the cycle – design, make, evaluate. They will have confidence to take risks and explain what they are doing and what they are going to achieve. Our children will also have an understanding of food and healthy eating.

You can follow our DT learning on Twitter by searching #lindenDT

EYFS Projects

	DT projects (Expressive Arts and Design – creating materials)	**Food Technology (PSED – managing self)**
FS1	Models linked to thematic questions	Food tasting vegetables and fruit (all year round) Fruit kebab - Summer
FS2	Models linked to thematic questions	Bread – Autumn 1 Soup , Lemonade, Baking and Decorating cakes – Autumn 2 Rice cakes, Jam Tarts, Cheese and tomato bites, Cucumber and celery bites – Spring 1 Fruit Kebab. Salad kebab, Easter nest cakes – spring 2 Fruit faces, Yoghurt lollies, Porridge – summer 1 Potato salad, Fruit lollies, Salad Pot – Summer 2

The DT projects covered throughout KS1 and KS2 are:

	Primary project	Secondary project	Food Technology
Year 1	Vehicles – constructing Spring Term	Coin Pouch - Autumn	Banana and raisin oat cookie – Summer
Year 2	Boat – balloon powered (pneumatics) Spring Term	Minibeast moving part animal - Summer	Fruit Jelly – Autumn
Year 3	Animals – (sewing) Autumn Term	Roman Aqueduct –Spring	Carrot cupcakes – Summer
Year 4	Torch – electrical components Summer Term	Egyptian moving toy (cams) – Spring	Banana bread – Autumn
Year 5	Space Buggy Summer Term	Shelters - Autumn	Apple Crumble - Spring
Year 6	Carousel – electrical, mechanical gears, levers, pulleys and structure Summer Term		Vegetable Pizza – Autumn

Progression of key technical knowledge

	Y1	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Structures	Vehicle	Boat	Roman Aqueduct		Shelter	Carousel
Mechanisms/ mechanical	Vehicle	Boat Moving part animal		Moving Toy – Egyptian Cams	Space Buggy	Carousel
Textiles	Coin pouch		Rainforest bird		Space Buggy accessories	Carousel
Electrical				Torch	Space Buggy	Carousel
Food	Raison and Banana Cookie	Fruit smoothie/jelly	Carrot Cupcakes	Banana Bread	Apple Crumble	Vegetable Pizza

Design and Technology Progression and Programme of Study

FS1	Personal, Social and Emotional Development		• Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen or one which is suggested to them.
	Physical Development		• Use large-muscle movements to wave flags and streamers, • paint and make marks. • Choose the right resources to carry out their own plan. • Use one-handed tools and equipment, for example, making snips in paper with scissors.
	Understanding the World		• Explore how things work.
	Expressive Arts and Design		• Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. • Explore different materials freely, in order 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. • Create closed shapes with continuous lines, and begin to use these shapes to represent objects.
FS2	Physical Development		• Progress towards a more fluent style of moving, with • developing control and grace. • Develop their small motor skills so that they can use a range of • tools competently, safely and confidently. • Use their core muscle strength to achieve a good posture • when sitting at a table or sitting on the floor.
	Expressive Arts and Design		• 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.
ELG	Physical Development	Fine Motor Skills	• Use a range of small tools, including scissors, paintbrushes and cutlery.
	Expressive Arts and Design	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.
	Personal, Social, Emotional Development	Managing Self	• Manage their own basic hygiene and personal hygiene and personal needs, including the importance of healthy food choices.

KS1 National Curriculum

Design
Pupils should be taught to:

- 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
Pupils should be taught to:

- 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
Pupils should be taught to:

- Explore and evaluate a range of existing products;
- Evaluate their ideas and products against design criteria.

Technical Knowledge
Pupils should be taught to:

- 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.

Cooking and Nutrition
Pupils should be taught to:

- Use the basic principles of a healthy and varied diet to prepare dishes;
- Understand where food comes from.

KS2 National Curriculum

Design
Pupils should be taught to:

- 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
Pupils should be taught to:

- 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
Pupils should be taught to:

- 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
Pupils should be taught to:

- 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.

Declarative Procedural knowledge	Y1	Y2	Y3	Y4	Y5	Y6
Design	Design purposeful, appealing products for themselves and other uses based on design criteria. Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.		Research and use their knowledge of a broad range of existing products to help generate their ideas; Design innovative and appealing products that have a clear purpose and are aimed at a specific user; Begin to explain how particular parts of their products work by using annotated sketches and cross-sectional drawings to develop and communicate their ideas; Explore different initial ideas before coming up with a final design; Understand that materials have both functional properties and aesthetic qualities; Start to explain their choice of materials and components including function and aesthetics;		Use research to inform and develop detailed design criteria to inform the design of innovative, functional and appealing products that are fit for purpose and aimed at a target market; Use their knowledge of a broad range of existing products to help generate their ideas; Design products that have a clear purpose and indicate the design features of their products that will appeal to the intended user; Explain how particular parts of their products work; Generate a range of design ideas and clearly communicate final designs; Use annotated sketches, cross-sectional drawings and exploded diagrams including computer-aided design) to develop and communicate their ideas; Test ideas out through using prototypes;	
Make (General)	With support, follow a simple plan Recognize and name a range of hand tools and equipment. Begin to select from a range of hand tools and equipment, Begin to know the basic characteristics of a range of materials, textiles and components. Begin to select from a range of materials, textiles and components according to their characteristics; Learn to use hand tools safely and appropriately; Use a range of materials and components; With help, measure and mark out; cut, shape and score materials with some accuracy; Begin to use simple finishing techniques to improve the appearance of their product, such as adding simple decorations.		With growing confidence, carefully select from a range of tools and equipment, explaining their choices; To begin to know and recognise the functional properties and aesthetic qualities of a range of materials Select from a range of materials and components according to their qualities With growing independence, measure and mark out to the nearest cm and millimetre; Cut, shape and score materials with some degree of accuracy; Assemble, join and combine material and components with some degree of accuracy;		Independently plan by suggesting what to do next; Confidently, select from a wide range of tools and equipment, explaining their choices; To know and recognise the functional properties and aesthetic qualities of a wider range of materials Select from a range of materials and components according to their functional properties and aesthetic qualities; Learn to use a range of tools and equipment safely and appropriately and learn to follow hygiene procedures; Cut a range of materials with precision and accuracy; Assemble, join and combine materials and components with accuracy; Refine the finish using techniques to improve the appearance of their product.	

Make and Technical Knowledge specific to outcome	**Structures**	**Vehicle** Talk about the simple working characteristics of materials and components; Explore and create products using mechanisms, such as levers, sliders and wheels	**Boat** Build simple structures, exploring how they can be made stronger, stiffer and more stable;	**Roman Aqueduct** Develop understanding of how to strengthen, stiffen and reinforce structures in order to create more useful characteristics of products; Build structures using knowledge of how to stiffen and reinforce more structures		**Shelter** Develop understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; Apply understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;	**Carousel** Further understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products; Apply understanding of how to strengthen, stiffen and reinforce more complex structures in order to create more useful characteristics of products;
	Mechanisms/ mechanical		**Boat** Talk about and start to understand the simple working characteristics of materials and components; **Moving part animal** Explore and create products using mechanisms, such as levers, sliders and wheels.		**Moving Toy – Egyptian (Cams)** Know that cams are a type of mechanical system Use mechanical systems in their products.	**Space Buggy** Know the names of different mechanical systems (cams, gears and pulleys Explain how mechanical systems, such as cams, create movement and use mechanical systems in their products;	**Carousel** Explain how mechanical systems, such as cams, create movement and use mechanical systems in their products;
	Textiles	**Coin pouch** Recognise simple running stitch and explain how it can be used to join and combine material. Begin to join and combine material using a simple running stitch		**Rainforest bird** Cut, shape and score materials with some degree of accuracy; Join and combine material and components with some degree of accuracy; Recognise different stitches and explain their purpose		**Space Buggy** Identify different types of stitches and their purpose Choose an appropriate stitch for a specific purpose (combining, decorating)	**Carousel** Recognise a wide range of different stitches Choose an appropriate stitch for a specific purpose (combining, decorating)
	Electrical				**Torch** Begin to understand how mechanical and electrical systems have an input and output process; Make and represent simple electrical circuits to create functional products;	**Space Buggy** Understand that mechanical and electrical systems have an input, process and output; Make and represent simple electrical circuits, such as a series and parallel, and components to create functional products;	**Carousel** Understand and explain that mechanical and electrical systems have an input, process and output; Make and represent simple electrical circuits, such as a series and parallel, and components to create functional products;

	Food	Fruit Smoothie	Fruit Jelly	Carrot Cupcakes	Raison and Banana Cookie	Apple Crumble	Vegetable Pizza
		Learn to use kitchen equipment safely and appropriately and learn to follow hygiene procedures; Assemble, join and combine materials, components or ingredient Cut, peel and grate ingredients, including measuring and weighing ingredients using measuring cups;		Start to know when, where and how food is grown in the UK, Europe and the wider world; Understand how to prepare and cook a variety of dishes safely and hygienically; Use a range of techniques such as mashing, whisking, crushing, grating, cutting, kneading and baking; Know that a healthy diet is made up of a variety and balance of different food and drink, as represented in the Eatwell Guide Apply the principles of a balanced diet when planning and cooking dishes; Understand that to be active and healthy, nutritious food and drink are needed to provide energy for the body; Prepare ingredients using appropriate cooking utensils; Measure and weigh ingredients to the nearest gram and millilitre; Start to independently follow a recipe;		Know, explain and give examples of food that is grown, reared and caught in the UK, Europe and the wider world; Understand about seasonality, how this may affect the food availability and plan recipes according to seasonality; Understand that food is processed into ingredients that can be eaten or used in cooking; Demonstrate how to prepare and cook a variety of dishes safely and hygienically including, where appropriate, the use of a heat source; Demonstrate how to use a range of cooking techniques; kneading, crushing Know and explain that foods contain different substances, such as protein, that are needed for health and be able to apply these principles when planning and preparing dishes; Adapt and refine recipes by adding or substituting one or more ingredients to change the appearance, taste, texture and aroma; Alter methods, cooking times and/or temperatures; Measure accurately and calculate ratios of ingredients to scale up or down from a recipe; Independently follow a recipe.	
	Evaluate	Start to identify strengths and possible changes they might make to refine their existing design; Evaluate their products and ideas against their simple design criteria; Know that the iterative process sometimes involves repeating different stages of the process.		Consider their design criteria as they make progress and are willing to alter their plans, sometimes considering the views of others if this helps them to improve their product; Evaluate their product against their original design criteria;		Critically evaluate the quality of design, manufacture and fitness for purpose of products as they design and make; Evaluate their ideas and products against the original design criteria, making changes as needed. Evaluate the key events, including technological developments, and designs of individuals, in design and technology that have helped shape the world.	