

Design and Technology at The Grove Junior School

National Curriculum

Purpose of Study for 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

- 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

- 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

Cookery

- 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

Links to learning in KS1

The majority of pupils transition to the Grove Junior School from The Grove Infant School. They base their programme of study for skills and knowledge from Chris Quigley.

This covers the content from the National Curriculum which states that pupils should be taught to:

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

Cookery

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

- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed

Intent

Design and technology prepares children to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages children to make positive changes to their quality of life. The subject encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. This allows them to reflect on and evaluate present and past design and technology, its uses and its impact.

At The Grove Junior School, our DT curriculum will encourage pupils to develop a range of practical skills, which can be applied both in and outside of the classroom. Lessons aim to develop these skills in a logical progression, building upon the foundation of previous learning.

The My Personal Best values play an important role within the teaching of DT at The Grove Junior School: providing a focus within each topic for pupils to develop interpersonal and practical skills such as problem-solving, resourcefulness and evaluation. These skills are applied both individually and within a working group.

Our curriculum aims to raise pupil's aspirations and highlight their position in the local community and the wider world. As such, projects undertaken in DT aim to examine the context of the design and creation process undertaken by pupils and how their designs may benefit their community.

Implementation

At the Grove Junior School, we follow a clear and comprehensive scheme of work in line with the National Curriculum. Our long term planning is mapped out to ensure progression between year groups. The context for the children's work in Design and Technology is considered and children learn about real life structures and the purposes of specific examples. Children will develop their skills throughout the programme of study. Design and Technology lessons are taught as a block so that children's learning is deeper and focused throughout each unit of work. Throughout each phase (LKS2 and UKS2) 5 topics are taught. Children will cover the same topic twice in two different year groups. This allows children to build their knowledge based on prior learning.

Through a variety of creative and practical activities, we teach the knowledge, understanding and skills needed to engage in the process of designing and making.

The process when designing and making follows some key steps.

1. Design – children will use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose and aimed at particular individuals or groups. Children will learn to generate, develop, model and communicate ideas through discussion, annotated sketches, cross-sectional diagrams, prototypes, pattern pieces and computer aided designs. Children will be encouraged to use vocabulary specific to Design and Technology.
2. Make – Children will be able to select and use a variety of tools and equipment to perform specific tasks. Such as cutting, joining, shaping etc. Children will be able to use a variety of materials, ingredients and components. Including constructing materials, textiles etc.
3. Evaluate – Children will have the opportunity to observe, investigate and analyse a range of existing products. They will evaluate their own ideas and products against design criteria. Using the views and opinions of others to improve their work.

Throughout the block, an in-depth health and safety focus will be implemented to ensure all tasks and activities are performed correctly. As part of the lesson planning and delivering cycle, health and safety will form the basis of one session so that children have a clear and secure understanding of how to use any tools or equipment involved safely.

These Design and Technology skills are delivered through a series of projects that provide opportunities for children to develop their skills over the course of the Key Stage. Resources from the Design and Technology Association, used by The Grove, provide clear guidelines on progression of knowledge and skills. As children complete work on the same skill twice over the course of the Key Stage, the delivery of D&T at the Grove provides a balanced coverage of these skills pitched at the appropriate challenge level.

Resources are organised prior to completing projects and are accessible for all staff so that each child has the opportunity to use a wide range of equipment to complete their project. Children work individually or in small groups depending on the nature of the task. Collaborative working is encouraged to help children with practical skills as well as the evaluation of the products they have made.

Through the planning and implementation of the D&T curriculum The Grove encourages children to become autonomous and creative problem-solvers, both as individuals and as part of a team. This allows them to reflect on and evaluate present and past design and technology, its uses and its impacts.

Impact

Our Design and Technology curriculum enables and encourages our children to become critical thinkers. They look at existing designs to analyse and assess its effectiveness and then they consider ways of redesigning and reconstructing it to improve its overall success. Through DT our children learn to take risks, become resourceful, innovative and enterprising individuals. Children learn to be passionate and excited by the designing and making of products including working with, preparing and tasting food.

Learning is assessed through the analysis of the pupil's ability to evaluate, design, make and improve their own work, book moderation, learning walks, staff and pupil surveys and against end of year expectations of DT.

DT Long Term Plan

	Autumn	Spring	Summer
Year 3	<p>Aspect of D&T Structures Focus Shell Structures Linked to Iron Man book in English</p> <p>Autumn 2 – Weeks 6-7</p>	<p>Aspect of D&T Mechanical systems Focus Levers and Linkages</p> <p>Spring 2 – Weeks 1-2</p>	<p>Aspect of D&T Food Focus Healthy and varied diet</p> <p>Summer 2 – Weeks 1-2</p>
	<p><u>Resources:</u> <i>Collection of shell structures for different purposes and users card, squared paper, coloured paper, adhesive tape, split pins, silver spray paint, kitchen rolls, masking tape, PVA glue, glue spreaders, acetate sheet, pencils, felt-tip pens, rulers, right/left handed scissors.</i></p>	<p><u>Resources:</u> <i>Books and other products with lever and linkage mechanisms, lever and linkage teaching aids card strips, card rectangles, paper, masking tape, paper fasteners, paper binders, stick glue, left/right handed scissors, cutting mats, card drill, finishing media and materials.</i></p>	<p><u>Resources:</u> <i>Information about foods from around the world, basic recipes range of relevant example foods to taste and evaluate, suitable equipment and utensils such as: knives, chopping board, weighing scales, measuring jugs, bowls, baking trays, spoons – various sizes, parchment paper, plastic film, Playdoh.</i></p>
	Autumn	Spring	Summer
Year 4	<p>Aspect of D&T Electrical systems Focus Simple circuits and switches Linked to science</p> <p>Autumn 2 – Weeks 1-2</p>		<p>Aspect of D&T Textiles Focus 2-D shape to 3-D product</p> <p>Summer 2 – Weeks 1-2</p>
	<p><u>Resources:</u> <i>handling collection of battery-powered electrical products switches including toggle, push-to-make and push to-break, aluminium foil, paper fasteners, paper clips, card, corrugated plastic, reclaimed materials, finishing materials</i></p>		<p><u>Resources:</u> <i>Collection of textile products linked to the chosen product to be made selection of fabrics and Fastenings left/right handed scissors, needles, thread, tape, fabric glue, pins, measuring tape, items to use for finishing e.g. fabric paints, threads, appliqué pieces, paints for printing, thin paint brushes.</i></p>

	<i>and media, buzzers, bulbs, bulb holders, zinc carbon or zinc chloride batteries, battery holders, wire, automatic wire strippers, suitable control program with interface box or standalone control box, right/left handed scissors, PVA glue, cutting mats</i>		
	Autumn	Spring	Summer
Year 5	<p>Aspect of D&T Food Focus Celebrating culture and seasonality</p> <p>Autumn 2 – Weeks 5-6</p>	<p>Aspect of D&T Structures Focus Frame Structures</p> <p>Spring 2 – Weeks 4-5</p>	<p>Aspect of D&T Mechanical systems Focus Pulleys or Gears</p> <p>Summer 2 – Weeks 3-4</p>
	<p><u>Resources:</u> <i>information about food from around the world, video clips of foods in the context of where they come from, range of relevant examples of foods to taste and evaluate, basic recipes, suitable equipment and utensils to make and cook recipes such as: weighing scales, measuring jugs, bowls, spoons – various sizes, baking trays, parchment paper, plastic film</i></p>	<p><u>Resources:</u> <i>products, photographs, web-based resources of existing frame structures card, paper straws, newspaper, square sectioned wood, masking tape, PVA glue, pencils, rulers, right/left handed scissors, bench hooks, G-clamp, junior hacksaws, glass paper, finishing media and materials</i></p>	<p><u>Resources:</u> <i>videos, photographs and everyday products or toys with pulleys or gears, batteries, battery holders, wires, crocodile clips, motors, switches, aluminium foil, paper fasteners, paper clips, card, motors, motor stands, dowel, paper sticks, consumable and construction kit pulleys or gears of different sizes, elastic bands, junior hacksaws, glass paper, G-clamps, bench hooks, hand drill, automatic wire strippers, PVA glue, sticky pads, masking tape, dowel, double-sided tape, card triangles, square section wood, card, corrugated plastic, finishing media</i></p>
	Autumn	Spring	Summer
Year 6	<p>Aspect of D&T Textiles Focus Combining different fabric shapes</p>		<p>Aspect of D&T Electrical systems Focus More complex switches and circuits</p>

	<p align="center">Autumn 2 – Weeks 6-7</p>		<p align="center">Autumn 2 – Weeks 1-3</p>
	<p><u>Resources:</u> <i>existing textile products for investigation and deconstruction linked to their product, wide selection of textiles including reclaimed and reusable fabrics, dipryl pins, needles, thread, measuring tape, left/right handed fabric scissors, pinking shears iron, iron transfer paper, sewing machine range of fastenings, materials for insulating or strengthening e.g. bubble wrap, wadding, interfacing finishing materials e.g. sequins, buttons, fabric paints</i></p>		<p><u>Resources:</u> <i>zinc carbon or zinc chloride batteries, crocodile leads, bulbs, bulb holders, buzzers, light emitting diodes (LEDs), micro switches, reed switches and magnets, light dependent resistors (LDRs), wire, automatic wire strippers, masking tape, construction materials and tools as required computer control software and interface boxes or standalone boxes, connecting leads.</i></p>