



Grange Primary School

Pursuing excellence for every child

Design and Technology Policy

Curriculum Intent

Design and Technology education involves two important elements - learning about the designed and made world and how things work, and learning to design and make functional products for particular purposes and users. It aims to prepare learners to take part in the development of tomorrow's rapidly changing world. Creative thinking encourages learners to make positive changes to their quality of life. The subject encourages learners to become autonomous and creative problem-solvers, both as individuals and as part of a team. Learners at Grange Primary need practical, first hand experiences in order to reach their potential. Through a variety of creative and practical activities, learners should develop their knowledge, understanding and skills needed to engage in the process of designing, making and evaluating products. This should be rooted in work set in a range of relevant contexts.



Aspirations

This driver will ensure that our pupils are aware of a diverse range of career opportunities and the lifelong learning available to them. This will be achieved through aspirational speakers that visit our school and studying significant people within the curriculum.

Independence

Independence is the thread throughout all of our curriculum and is carefully nurtured through well planned lessons with some clear success criteria. Pupils are encouraged to seek out resources, practise, apply and develop skills as well as building resilience.

Characteristics of a Designer

- Significant levels of originality and the willingness to take creative risks to produce innovative ideas and prototypes.
- An excellent attitude to learning and independent working.
- The ability to use time efficiently and work constructively and productively with others.
- The ability to carry out thorough research, show initiative and ask questions to develop an exceptionally detailed knowledge of users' needs.
- The ability to act as responsible designers and makers, working ethically, using finite materials carefully and working safely.
- A thorough knowledge of which tools, equipment and materials to use to make their products.
- The ability to apply mathematical knowledge.
- The ability to manage risks exceptionally well to manufacture products safely and hygienically.
- A passion for the subject and knowledge of, up-to-date technological innovations in materials, products and systems

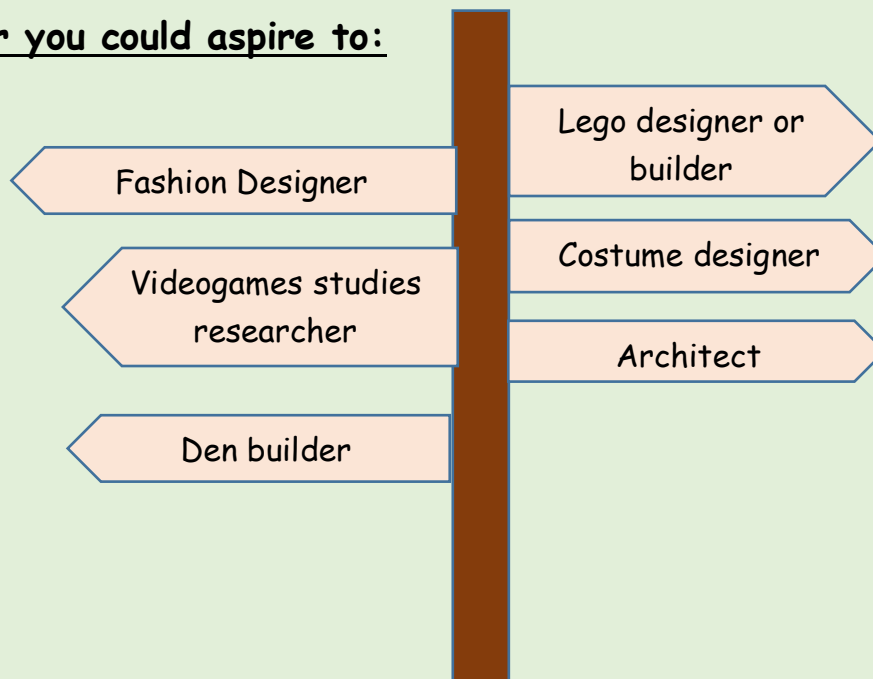
Implementation

Our pupils should be able to organise their knowledge, skills and understanding around the following threshold concepts:

- Master practical skills
- Design, make, evaluate and improve
- Take inspiration from design throughout history

[Add link to the curriculum breadth maps for Design and Technology](#)

As a Designer you could aspire to:



Assessment

Through the explicit teaching of Design and Technology skills, both the teachers and the pupils assess their learning continuously throughout the lesson. Progress will be checked at three assessment intervals throughout the year from pupils' books.

Links to EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas.

The most relevant early years outcomes for art are taken from the following areas of learning:

- Physical Development
- Expressive arts and design

DT			
Three and Four-Year-Olds	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.
Reception	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.

Curriculum Impact

At Grange Primary School, we aspire that pupils will have gained knowledge and understanding of different skills and techniques required to problem-solve by researching, designing, making and evaluating a variety of products. The opportunity for children to refine and develop their techniques over time is supported by effective lesson sequencing and progression between year groups. Children will have high levels of exposure to the subject, which ensures that the children acquire a high level of relevant vocabulary. Children will know the importance of the knowledge and skills they have acquired and how they aid the research, design, make and evaluate process, as well as how these techniques and skills will aid them in future life and learning. Our children will learn how to become resourceful, innovative, enterprising and capable citizens.

Impact Statement

EYFS

In the EYFS, children will be introduced to career aspirations through discussions about 'people who help us'. They will begin to develop their skills and knowledge through discussions and stories, whilst hearing and using the language and vocabulary which is appropriate to their learning. Most children by the end of EYFS, at Grange Primary School, will be able to:

Skills

Physical Development (Moving and Handling/Health and Self-Care) - use one-handed tools and equipment, e.g. makes snips in paper with child scissors, understand that equipment and tools have to be used safely, use simple tools to effect changes to materials, handle tools, objects, construction and malleable materials safely and with increasing control, show understanding of the need for safety when tackling new challenges and consider and manage some risks, show understanding of how to transport and store equipment safely, practise some appropriate safety measures without direct supervision.

Understanding the World (Technology) - show an interest in technological toys with knobs or pulleys, or real objects, show skill in making toys work by pressing parts or lifting flaps to achieve effects, such as sound, movements or new images.

Expressive Arts and Design - explore different materials freely, 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, return to and build in their previous learning, refining ideas and developing their ability to represent them, create collaboratively sharing ideas, resources and skills.

Knowledge

By the end of EYFS, children will be able to hold and use scissors safely and cut accurately. They will be able to join items using different techniques and use glue to fix items together. Children will know they can change and adapt something they have made and work together with a friend to share ideas. Children in EYFS will know about some different materials and will be able to talk confidently about what they have made.

KS1 - Year 1 and 2

By the end of year 1 and 2, pupils at Grange Primary School will know about some of jobs that someone who enjoys Design and Technology could do. With support, they will develop their skills and independence, whilst using the language and vocabulary which is appropriate to their learning. Most children by the end of year 1 and 2, at Grange Primary School, will be able to:

Skills

Year 1

Textiles - Join textiles using a running stitch; shape textiles using templates; colour and decorate textiles using a number of techniques (dyeing, adding sequins, printing);

Mechanics - Create products using levers, wheels and winding mechanisms

Computing - Model designs using software.

Food - Cut, peel or grate ingredients safely and hygienically.

Year 2

Materials - Show a range of cutting and shaping techniques (tearing, cutting, folding and curling); cut materials safely using tools provided; measure and mark out the nearest centimetre; demonstrate a range of joining techniques (gluing, hinges or combing materials to strengthen)

Construction - Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.

Mechanics - Create products using levers, wheels and winding mechanisms.

Electricals and electronics - Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage);

Computing - Model designs using software.

Food - Cut, peel or grate ingredients safely and hygienically; measure or weigh using measuring cups or electronic scales; assemble or cook ingredients.

Knowledge

Pupils in Year 1 will look at a range of Christmas baubles, looking specifically at the shape, size and colours used. They will use their observations to identify their own likes and dislikes and will suggest improvements. They will produce a Christmas tree decoration, ensuring it can be hung on a branch, is bright and festive and is safe to be around children. Following on from this, children in Year 1 will look through a range of pop up books and will identify their own likes and dislikes and will suggest improvements. The children will produce a pop up Easter themed picture, with two moving parts (pivot and lever). Pupils in Year 1 will taste test a range of fresh fruit and will discuss and explain their likes and dislikes. Children will create a fresh fruit kebab, to promote healthy eating.

Pupils in Year 2 will look at and discuss a range of houses around the world - focusing on their design features and why they are like that. They will take inspiration from this and design and create a house that is suitable for a fairy or an elf. In Spring term, pupils will look at images of moving vehicles through history and will discuss how the vehicle is powered and how many people can fit inside. Pupils will be able to create a moving vehicle using an electrical circuit and will spot faults and fix them, if they arise. Year 2 pupils will taste test a range of biscuits, before producing their design. They will then make a biscuit based treat, suitable for a child.

LKS2 - Year 3 and 4

By the end of year 3 and 4, pupils at Grange Primary School, will know about the range of jobs that someone who enjoys Design and Technology could do and the pathways to get into them. They will develop their skills and apply them independently, whilst using the language and vocabulary which is appropriate to their learning. Most children by the end of year 3 and 4, at Grange Primary School, will be able to:

Skills

Year 3

Textiles - Understand the need for a seam allowance; join textiles with appropriate stitching; select the most appropriate techniques to decorate textiles.

Mechanics - Choose appropriate mechanisms for a product (such as levers, gears winding mechanisms and pulleys).

Electrical and electronic - Create series and parallel circuits.

Computing - Control and monitor models using software designed for this purpose

Year 4

Textiles - Understand the need for a seam allowance; join textiles with appropriate stitching; select the most appropriate techniques to decorate textiles.

Materials - Cut materials accurately and safely by selecting appropriate tools; measure and mark out to the nearest millimetre; apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs); select appropriate joining techniques.

Construction - Strengthen materials using suitable techniques; choose suitable techniques to construct products or to repair items.

Food - Prepare ingredients hygienically using appropriate utensils; measure ingredients to the nearest gram accurately; follow a recipe; assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).

Knowledge

Children will research a pencil case design, looking at the shape and function. Before the design process, pupils will test real pencil cases to see how easy they are to open and close. Pupils in Year 3 will know how to design and make a letter to Santa writing toolkit which must close with a zip or button and must be big enough to hold a pencil, rubber and small scroll of paper. Pupils will take inspiration from Jan Pienkowski with the paper engineering inside the book 'Haunted House'. They will design and create a pop-up book that has a levers and pulley system, as moving mechanisms. Year 3 children will research the history of torches and electricity and work in teams to choose a design brief. They will then create a torch in groups and will evaluate their final creation.

Pupils in Year 4 will understand how seasonal stockings are made and decorated, by looking at and disassembling an existing stocking. They will use the computer program Paint to create a design and then will make a stocking that can be used at Christmas. The children will begin by looking at the history of greenhouses; what they are used for, how does it help plants to grow and the different types of greenhouses you can get. Pupils will explore different materials to use and how best to join them together for the most stable structure. They will use their design criteria to build their greenhouse and then evaluate it. Pupils in Year 4 will look at how different vegetables are grown and produced on farms; from farm to fork. Pupils will know how to design their pizza as well as preparing the food to go on it and eventually making it. Pupils will make their own seasonal vegetable pizza and evaluate.

UKS2 - Year 5 and 6

By the end of year 5 and 6, pupils at Grange Primary School, will know about the range of jobs that someone who enjoys Design and Technology could do and the pathways to get into them. They will develop their skills and apply them independently, whilst using the language and vocabulary which is appropriate to their learning. Most children by the end of year 5 and 6, at Grange Primary School, will be able to:

Skills

Year 5

Textiles - Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration); choose from a range of stitching techniques; create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion); create objects (such as a cushion) that employ a seam allowance; show precision in techniques; combine previously learned techniques to create pieces.

Materials - Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape); choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than would be used to cut paper);

Construction - Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).

Mechanics - Convert rotary motion to linear using cams.

Year 6

Materials - Show an understanding of the qualities of materials.

Construction - Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding); choose appropriate tools to cut and shape; cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape).

Electrical and electronic - Create circuits using electronic kits that employ a number of components (such as LEDs, resistors, transistors and chips); write code to control and monitor models or products; use prototypes, cross-sectional diagrams and computer aided designs to represent designs.

Food - Measure accurately and calculate ratios of ingredients to scale up or down from a recipe; understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms); create and refine recipes, including ingredients, methods, cooking times and temperatures; demonstrate a range of baking and cooking techniques.

Knowledge

Year 5 pupils will listen to a range of African instruments and will evaluate their effectiveness, suggesting improvements which focus on the aesthetic features and the sound it makes. Children will then design and create their own African themed Christmas instrument. Pupils in Year 5 will compare different ways of using electrical motors to create rotating parts. They will then explore ways to make a framework for their own fairground ride. Pupils will then design and create their own fairground ride which rotates. Pupils in Year 5 will have opportunities to look at different cushions and will understand key terms such as aesthetic and functional. They will practise various stitches (back stitch and running stitch) and will understand which stitches should not be seen and why. Children will design and create their own cushion and evaluate it.

Year 6 pupils will produce mince pies from scratch, to sell. Children will have researched, tasted, evaluated, designed and created their own products before evaluating the success of their product. Pupils will look at four types of bridges (beam, cantilever, arch and hanging) and research them to find out key information such as the materials used and the pros and cons for each. The research will be used to aid the design stage and then they will create a draw bridge with a moving part. Year 6 pupils will use various sources to research toys from the past and present and will discuss how they move. Taking inspiration from their research, they will design their own moving toy and will follow their own design and instructions to create it, using strengthening techniques and a moving mechanism. Finally, the children will evaluate their product identifying their successes and how to improve their design for next time.