

Grange Design and Technology Curriculum

Design and Technology Curriculum Intent

At Grange Primary School the teaching of design and technology involves the application of skills for life. Pupils develop an authentic creativity and understanding of practical, real-life problem solving through our school ethos of 'Living, Learning and Laughing'.

Living

A main priority for the design and technology curriculum at Grange is to ignite the children's curiosity and aspirations for a future career in design and technology. Embedded into the curriculum are opportunities to have hands-on experience of the potential career choices in the technology field. Children will look at how this is ever-changing and adapting as advances in technology continue and will understand the importance of innovation in shaping peoples' futures.

We endeavour to strengthen our links within the community by engaging with local businesses through workshops, experience days and regional and national competitions.

Laughing

During their time at Grange, children will also have the opportunity to engage in extra-curricular activities to continue their learning outside of the classroom. University Workshops are designed to enable children to specialise in an area of design and technology that they want to explore further. For example: children will learn about food and nutrition through a variety of cooking workshops held at different times throughout the year or become inventors in designing, making and evaluating their own ideas and products. We also use University Workshops to address current world issues such as: the rise in plastic pollution where pupils use litter picking as a means to protect the environment and raise awareness within their community. Where appropriate, children will have the opportunity to learn about design and technology processes through first-hand experiences; meeting professionals within the field and also enjoying trips and visits to key design and technology businesses within our local area.

At select times throughout the year, children also have the opportunity to engage in national and regional design and technology-based competitions where they are encouraged to design innovative products which solve real-life problems. Parental engagement is encouraged throughout each year group, during specific projects and school-wide competitions are run throughout the year, which can involve families and children working on specific projects at home.

Learning

At Grange, we aim for all children to develop the creative, technical and practical expertise needed for them to perform everyday tasks in an increasingly technological world. Each year, children will build upon their previously learnt skills to gather a repertoire of knowledge and understanding and skills. Such progression will enable children to build high-quality and pioneering prototypes for a range of purposes. Children will progress in their ability to critique, evaluate and test their products and the work of others.

Design and Technology Curriculum Implementation

Design and Technology is a crucial part of school life and learning and it is for this reason that as a school we are dedicated to the teaching and delivery of a high-quality Design and Technology curriculum. This is implemented through:

- A well thought out, whole school, yearly overview of the DT curriculum which allows for progression across year groups in all areas of DT (mechanisms, structures, textiles, CAD and food technology)
- Cross-curricular links are promoted to allow all children to deepen their understanding across the curriculum, including the use of technology, and artworks from year group specific historical, geographical and scientific contexts
- Well planned and resourced projects providing children with a hands-on and enriching experience
 - A range of skills being taught ensuring that children are aware of health and safety issues related to the tasks undertaken
- Each project from Year 1 to Year 6 addressing the principles of designing, making, and evaluating and incorporating relevant technical knowledge and understanding in relevant contexts
- Pupils being introduced to specific designers, chefs, nutritionists, etc. helping to engender an appreciation of human creativity and achievement and increase the cultural capital from which they can draw in the future

Early Years Foundation Stage

During the EYFS pupils explore and use a variety of media and materials through a combination of child initiated and adult directed activities. They have the opportunities to learn to:

- Use different media and materials to express their own ideas
- Use what they have learnt about media and materials in original ways, thinking about form, function and purpose
- Make plans and construct with a purpose in mind using a variety of resources

Our EYFS curriculum enables children to build on these skills, whilst following their interests and fascinations in a range of subject areas. Some of the examples of provision in EYFS are Food Technology- food preparation, tasting and baking, Structures - junk modelling and using a variety of malleable materials and construction materials (Mobilo, Lego/Duplo, play dough, sand, crates, tyres, wooden blocks and planks etc.) inside and outside, for a purpose and to bring their ideas to life and build with, Textiles- various embellishments and materials (tissue paper, card, pom pom, lolly pop sticks, pipe cleaners, fabric pieces etc.) both inside and outside to explore and make with.

Understanding Types of Knowledge

Substantive knowledge - this is the core subject knowledge, skills and vocabulary used about the designing and making processes and the contribution of designers from a range of genres, times and cultural traditions. We explore these through the lenses of substantive concepts which are taught through explicit vocabulary instruction as well as through the direct content and context of the study. The substantive concepts that we develop through our Design and Technology curriculum are: mechanisms, structures, textiles and food technology.

Disciplinary knowledge - In addition to the core knowledge required to be successful within each of these elements, our curriculum outlines key aspects of how we intend to develop working as a designer. We organise our curriculum so that it focuses on developing different aspects of these competencies at different points. The features of working as a designer in our Design and Technology Curriculum are: link it, research it, design it, resource it, make it and evaluate it.

Adapting the Curriculum for Pupils with SEND

Design and technology lessons are differentiated in a variety of ways. We ensure that we vary our teaching styles to suit the children in the class through visual aids, hands on learning, auditory clips as well as discussion and simplification of language where needed. We provide a range of different size equipment to support children in developing their fine motor skills. The curriculum is modified to remove barriers, so pupils are able to access the objectives. Some activities may require us to provide a 'parallel' activity for pupils with SEN and/or disabilities, so that they can work towards the same lesson objectives as their peers, but in a different way — eg using a computer simulation of a process rather than manipulating equipment. Adult support is also planned to offer support and scaffold individual pupils. We also consult with pupils and parents to ascertain how much support they require this allows them to be as independent as possible.

Design and Technology Curriculum Impact

At Grange, we have a successful Design and Technology curriculum where children have access to a range of activities and have positive, successful experiences that empower children to investigate and consider how to improve current designs of products with which they interact. Pupils learn the possibilities for careers in the Design and Technology, as a result of our community links and involvement of those parents/carers with professions in areas of Design and Technology. Our children are designers, inventors and chefs and this results in motivated learners with understanding of form and function. Children will be prepared for the next step in their life journey and in a position to participate fully in the design and making of functional products or culinary dishes, both formally in education and beyond.

Pupil's skills and knowledge are assessed ongoingly by the class teacher, throughout lessons and a summative assessment is completed after each project. This informs the Design and Technology coordinator of any further areas for curriculum development, pupil support and/or training requirements for staff. EYFS pupils' progress and attainment tells us whether each individual child is below expected or at expected attainment for their age.

National Curriculum Programmes of Study in Design and Technology

	EYFS (Development Matters & ELG)	KS1	KS2
Design	Pupils should be taught to: Nursery- - Create closed shapes with continuous lines and begin to use these shapes to represent objects. - Draw with increasing complexity and detail, such as representing a face with a circle and including details. - Use drawing to represent ideas like movement or loud noises. - Develop their own ideas and then decide which materials to use to express them. Reception- - Explore, use and refine a variety of artistic effects to express their ideas and feelings.	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.	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: Nursery- - Explore different materials freely, to develop their ideas about how to use them and what to make. - Join different materials and explore different textures. - Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. Reception- - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function (ELG).	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.	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: Nursery- - Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions. Reception- - Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. - Create collaboratively, sharing ideas, resources and skills. - Share their creations, explaining the process they have used (ELG).	Pupils should be taught to: - explore and evaluate a range of existing products. - evaluate their ideas and products against design criteria.	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	Pupils should be taught to: Reception- Return to and build on their previous learning, refining ideas and developing their ability to represent them.	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.	Pupils should be taught to: - 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: Nursery: • Make healthy choices about food and drink. • Washing and drying their hands thoroughly. Reception- • Know and talk about the different factors that support their overall health and wellbeing • Manage their person hygiene.	Pupils should be taught to: • use the basic principles of a healthy and varied diet to prepare dishes. • understand where food comes from.	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.
------------------------------	---	--	--

Yearly Progression of NC Knowledge, Skills and Understanding- Substantive and Disciplinary Knowledge

Highlighted colours show progression within the same area between year groups.

Year Group	Disciplinary knowledge	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	-Be motivated to make something by an adult's WAGOL. -Begin to talk about their ideas and listen to an adult about how those ideas can be made. -Follow and copy simple step by step actions with an adult. -Hold attention on a chosen invention for a short amount of time. -Begin to handle equipment safely, with adult reminders. -Explore a variety of materials, tools and techniques, for example know how Lego joins together. -Washes hands with adult guidance before touching food. -Pretends to use different actions to serve food in role play.	Mouldable Materials Making representation of ourselves and our family	Structures Making habitat homes for woodland animals and insects.	Mechanisms and Structures Junk Modelling Transport Food Technology Lunar New Year Tasting traditional Chinese foods	Food Technology Healthy Eating Designing our own garden	Structures Making houses for the three little pigs	Textiles Exploring different materials and textures to make under the sea habitats.
Reception	-Think of what they want to make with a given set of resources -Begin to be aware that the resources they have will limit what they can make. -Talk to an adult about what they want to make. -Make decisions about how to approach a task before starting. -Start to choose the resources they need to make a product. -Handle equipment safely -Explore a variety of materials, tools and techniques, for example know how Lego joins together. -Begin to appreciate that glue does not work on all materials. -Show increasing levels of independence in the making stage. -Be prepared to stop to check how well their product is developing. -Changing strategy as needed when they know their product is not turning out the way they wanted. -Be able to explain to others how they made their product and be able to offer a simple explanation as to how they would improve on	Mini Unit: Mouldable Materials Driver: What might we see in Autumn? Design and make a hedgehog for our small world tuff tray. Design: -What do hedgehogs look like (shape, features, colour etc)? -Where might we find our research? (books, pictures, PP) -What size would our hedgehogs need to be (small, medium, big), to be accessible to play with in the wooden homes? -What tools might be used to shape clay? Make: -Handling clay tools safely and accurately.	Food Technology- Christmas Baking Day Mini Unit: Structures Driver: Who's Trip Trapping Over my Bridge? Designing a bridge for The Three Billy Goat's Gruff. Design: -What types of bridges are there? -What bridges are there around the world? -What features do bridges have? -What does a bridge need to have? -What materials are strong? -Draw and labelling a bridge.	Mini Unit: Food Technology Lunar New Year- tasting traditional Chinese foods and making fruit kebab dragons. Design: -What fruits are easiest to chop? -Choosing their favourite fruits to include. - What are traditional Luna New Year foods? Make: -Ensuring good hygiene by washing our hands before. -Selecting the right fruits from their previous design and discussion. -Using utensils to chop with adult support. Evaluate:	Food Technology Mixing Easter Nest Cakes Mini Unit: Structures Driver: How do we look after animals and insects? Making habitats for animals from different environments around the world. Design: -Use prior knowledge and gain further information as a class, to design a habitat for their own animal/insect. -Use picture books to research where certain animals live and the features of their environment. Make: -Select appropriate resources to make their habitat (both natural and manmade).	Mini Unit: Mechanisms Driver: How do we make astronauts move? Using split pins to design and make astronauts. Design: -What do astronauts wear in space? -How do they move around in space? -What would make a paper astronaut move the best? Make: -Joining materials such as paper, with split pins to make the parts of the body move. -Using different materials to create parts of the astronaut's body. -Knowing what materials, a split pin would go through. Evaluate:	Food Technology -Tasting different exotic fruits. -Young Chef Award based on fruit. Mini Unit: Textiles Driver: What's in Handa's basket? Design: -What does a traditional African basket look like? -What materials are they made from? -What is the process of weaving? Make: -Practise weaving using a range of materials (starting with basic fabric weaving through a weaving apparatus and then onto paper weaving. -Think about the shape of the paper basket when cutting.

	it. -Know why it is important to wash their hands before handling food. -Begin to understand which foods go together and which do not. -Begin to name certain foods such as sandwich, samosas etc. -Cut food safely with adult guidance.	-Finding natural resources to add to our clay for features. -Thinking about our actions to mould clay into the shape that we want it to. -Choosing a colour for a purpose. Evaluate: -In the moment when making, talk about what is making their product better. -To talk about what they like and don't like about their hedgehog. -To give somebody else a compliment about their hedgehog. Technical knowledge: -Actions- how to mould clay. -knowing how to use tools for mouldable materials.	Make: -Selecting materials to build a strong bridge. -Joining materials. -Bending, stacking and shaping materials to make a shape/feature. Evaluate: -In the moment when making, talk about what is making their product better. -To talk about what they like and don't like about their bridge. -To expand your bridge ideas from inspiration of somebody else's bridge. Technical knowledge: -Joining two resources together. - Knowing what material is suitable to be strong enough to hold a toy goat. -Shaping materials. -Building with materials.	-Discussing food/fruits they did like and explaining this using their 5 senses. -Explaining and changing how to cut fruit better. Technical knowledge: -Safely using blunt knives to chop soft fruits. -Knowing that different cultures may eat different foods to our own cultures.	-Think about how they are going to make their animal habitat strong and how it best represents their true environment. -Use stacking and joining techniques to make their habitat enclosure. Evaluate: -Make chances based on how they may need to adapt their habitats. -Explain to others how they are making the habitat. -Be open to working as a team to create a habitat. Technical knowledge: -Show knowledge of stacking and joining materials, both natural and manmade.	-In the moment when making, talk about what is making their product better. -To talk about what they like and don't like about their astronaut. -Knowing what tools and materials they could have used better to make the split pins easier to use. Technical knowledge: -Joining materials with split pins. -Knowing the flexibility of materials.	Evaluate: -What would have made weaving easier (sticking the paper down etc). -Did I persevere with weaving? Technical knowledge: -The process of weaving.
*The above yearly overview for EYFS may be subject to change depending on children's interests and fascinations. Although the mini projects are detailed above, these may be altered by staff depending on children's progress throughout the year and skills are continuously covered and practised in key areas such as the 'Construction Area', 'Craft Area', 'Outside Area' and linked throughout our whole EYFS environment. Our EYFS curriculum enables children to build on skill sets, whilst following their interests and fascinations in a range of subject areas.							
Year 1	-Begin to research existing products before designing their own. -When researching, find out how products work and which materials have been used. -Use own ideas to design something. -Describe how their own idea works. -Design a product which moves. -Explain to someone else how they want to make their product. -Make a simple plan before making. -Begin to develop their own ideas through drawings, and where appropriate, make templates or mock ups of their initial ideas. -Use own ideas to make something. -Assemble and join materials using a variety of methods.		Unit: Mechanisms and Structures Driver: Creating a pop-up toy or toy with a slider. Design: -Research toy products. -Design a product which moves. -Make a simple plan before making. -Begin to develop their own ideas through drawings.	Unit: Food Technology Driver: Making a sandwich. Design: -Research favourite sandwiches in the class. -Research together which ingredients are healthy. -Explain to someone else how they want to make their sandwich. -Decide on their sandwich choice and fillings and represent this through drawings.			Unit: Textiles Driver: Design and make a badge or logo from material. Design: -Research our own school logo and other schools and business logos in the area. -Use own ideas from their own knowledge and what they have researched about logos to design their own logo. Make: -Assemble and join materials using a variety of

	-Begin to build structures, exploring how they can be made stronger, stiffer and more stable. -With help, measure, mark out and cut a range of materials. -Use tools safely (e.g. scissors and a hole punch). -Begin to assemble, join and combine materials and components together using a variety of temporary methods (e.g. glue or Sellotape). -Begin to use simple finishing techniques to improve the appearance of their products. -Describe how something works -Explain what works well and not so well in the model they have made. -Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make.		Make: -Begin to build structures, exploring how they can be made stronger, stiffer and more stable. -Explore the use of different mechanisms, such as simple levers and sliders. -Begin to assemble, join and combine materials and components together using fasteners, glue or Velcro. Evaluate: -Explain what works well and not so well. -Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make Technical knowledge: -Make their own model stronger. -Make a product that has at least one moving part.	Make: -Begin to make sandwich, taking account of cutting safely. -With help, measure, mark out and cut ingredients. -Begin to use simple finishing techniques to improve the appearance of their products (i.e. set it out on a plate properly). Evaluate: -Explain what went well and not so well in the making of the sandwich they have made. -Begin to evaluate their sandwich as they are developed and use simple strategies such as their senses to do so. Technical knowledge: -Cut food safely. -Know that all food comes from either plants or animals. -Use basic food handling, hygiene practices and personal hygiene. -Know how to prepare simple dishes safely and hygienically without using a heat source. -Know how to use techniques such as cutting.		methods that they have practised, primarily gluing. -Begin to use simple finishing techniques to improve the appearance of their products. Evaluate: Begin to evaluate their products as they are developed, identifying strengths and possible changes they might make. Technical knowledge: -Understanding how to use a glue gun with adult support. -Understanding how best to join certain types of materials.	
Year 2	-Begin to develop their design ideas using research and discussion with peers and adults. -Understand the purpose of their product. -Think of an idea and plan what to do next. -Explain why they have chosen specific textiles or materials.		Unit: Structures Driver: Can we design a building over 20cm tall Design: -Research large tower like buildings in London.	Unit: Food technology Driver: Design and make a pizza Design: -Research the ingredients of pizzas and how they are made. -Design a pizza, based on peers' preferences.		Unit: Textiles Driver: Design a roof for an African building Design: -Research traditional African homes in parts of Kenya.	

	-Draw a simple design and label the parts of their product. -Develop their own ideas through drawings, and where appropriate, make templates or mock ups of their initial ideas. -Choose tools and materials and explain why they have chosen them. -Join materials and components in different ways. -Can identify and name a simple selection of hand tools (e.g. scissors). -Carry out finishing techniques that have been modelled by the teacher. -With help, measure, cut and score with some accuracy. -Start to assemble, join and combine materials in order to make a product. -Start to choose and use appropriate finishing techniques based on their own ideas. -Evaluate their work against their design criteria. -Look at a range of existing products and what they like and dislike about products and why. -Start to evaluate their products as they are developed, identifying strengths and possible changes they might make. -With confidence talk about their ideas, saying what they like and dislike about their product.		-Design a tower building that would not be out of place in London. -Discuss with peers what they have found from their research. -Draw a simple design of their building and annotate with labels. Make: -Choose appropriate materials based on strength and chosen design. -Join materials with different methods, including glue, masking tape and Sellotape. -Ensure the structure is at least 20cm tall and can stand without support. Evaluate: -Reflect on how they used the brief to their finished building. -Improve and change things as they make. -Peer evaluate and discuss what they like and dislike. Technical knowledge: -Make a model stronger and more stable.	-Order the main stage of making a pizza. Make: -Choose utensils, name them and explain why they have been chosen. -Measure out ingredients, ensuring they have the right balance of each. -Use tools safely (grating, chopping, cutting the pizza into slices). Evaluate: -Compare to their design brief, did they use the same amount of ingredients, if not did it change the taste? -Use their senses to evaluate their pizzas. -Evaluate while making the pizza, adapt when needed. Technical knowledge: -Know that everyone should eat at least five portions of fruit and vegetables each day. -Demonstrate how to use techniques such as cutting, peeling and grating. -Follow safe procedures for food safety and hygiene.		-Incorporating sewing into the roof design. -Take account of Kenyan art when designing roof. -Draw and annotate a simple design from the research. Make: -Gather materials that factor in camouflaging. -Join materials that will make the base of the tent. -Use a running stitch to join fabric materials. Evaluate: -Talk about their ideas with confidence of what worked and what didn't and how they will or would overcome that. -Compare their finished tent to their original design brief and if their African art is present. Technical knowledge: -Make a model stronger and more stable. -How to effectively use a running stitch.
Year 3	-Research independently and generate some ideas before thinking about resources. -Consider the purpose and audience for their product -Design a product and make sure that it meets the design criteria		<u>Unit: Textiles</u> Driver: Design a weaving loom to create a floor mat for the Ancient Greeks.	<u>Unit: Structures</u> Driver: To research, design, make and evaluate a monument. Know how you will make your structure sturdy and		<u>Unit: Food Technology</u> Driver: Design and make scones or cupcakes for a British Afternoon Tea.

	including looking attractive (if needed). -Draw annotated designs with labels that detail their material choices and suitability of the given materials -Learn about inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products. -Start to understand whether their products can be recycled or reused. -When planning, explain their choices of materials and components, including function. -Follow a step-by-step plan, choosing the right equipment and materials. -Select the most appropriate tools and techniques for a given task. -Work accurately to measure, mark out, make cuts, score, make holes and assemble components with more accuracy. -Choose finishing techniques to improve the appearance of their products using a range of equipment. - Start to think about their ideas as they make their product and be willing to change things if they help them to improve their work. -Start to measure, tape or pin, cut and join fabric with some accuracy. -Explain how to improve a finished model -Know why a model has or has not been successful -Evaluate their product against their original design criteria (e.g. how well it meets its intended purpose). -Evaluate the key designs of individuals in DT has helped shaped the world.		Design: -Research different ways of weaving. -Design a floor mat that has considered different patterns and textures. -Research the German artist Anni Albers and the American artist Sheila Hicks, for their innovation in weaving. Make: -Show the correct techniques when weaving and how to join the materials. -Follow their own plan step by step and think about how to revise the plan if things don't go the right way when weaving. Evaluate: -Reflecting on how the weaving process has gone, compared to their design. -Knowing why certain weaving processes were or weren't successful. Technical knowledge: -Knowing how to weave effectively. -Knowing how to join materials through the weaving process.		make amendments if necessary Know how to evaluate your structure by reflecting on what well and what needs to be improved. Design: -Compare with how structures/monuments are made today. -Know about the town so that the design is sympathetic to its heritage. -Take or gather photographs to use in the planning process. -Research famous Architects of monuments in the UK. Make: -Making sure they have enough material to make their monuments at least 30cms tall. -Explain how the structure they are making, represents their town or city. -Ensuring their structure is sturdy. Evaluate: -Change and adapt their design to make it stronger throughout the process. -Explain what they think was successful and not successful. Technical knowledge: -Know how to strengthen a product by stiffening a given part or reinforce a part of the structure.		Design: -Know what scones and cupcakes are. -Know what ingredients are required. -Design cupcakes to given criteria and explain what ingredients they need to make that specific design. -Research bakers (Mary Berry and Paul Hollywood) and gain inspiration from their recipes. Make: -Know the order of ingredients introduced and how much they need of each. -Know the temperature of the oven and the length of time to cook. Evaluate: -Evaluate did they keep their design simple enough. -Be able to explain what went to plan in their designs. -Assess how well they have turned out and set up a survey to find out what others thought. Technical knowledge: -Describe how food ingredients come together. -Weigh out ingredients and follow a given recipe -Understand how to prepare and cook safely and hygienically including, where appropriate, the use of heat source. -Begin to know that to be active and healthy, food and drink are needed to provide energy for the body.	
--	--	--	--	--	--	--	--	--

Year 4	-Research as a matter of course before considering designing a product. -Use ideas from other people when designing. -Confidently make labelled drawings from different views, showing specific features. -Produce a plan and explain the use of materials, equipment and processes. -Persevere and adapt work when original ideas do not work. -If the first attempt fails, identify strengths and future areas for development. -Communicate ideas through annotated sketches that show different viewpoints of the product. -Begin to be familiar with different inventors, designers, engineers, chefs and manufacturers who have developed groundbreaking products. -Know which tools to use for a particular task and show knowledge of handling the tool accurately and safely. -Know which material is likely to give the best outcome based on its properties. -Mark, measure and cut accurately a range of materials using appropriate tools, equipment and techniques. -Start to join and combine materials and components accurately in temporary and permanent ways. -Start to understand that mechanical systems have an input, process and output. -Know how mechanical systems (such as pulleys or gears) create movement. -Begin to use finishing techniques to strengthen and improve their appearance of their product using a range of equipment. -Evaluate and suggest improvements for designs.		<u>Unit: Mechanisms and Structures</u> Driver: How can we create a Roman weapon using a lever system which can propel a marble Im? Design: -Research to find out more about Roman weapons. -Research Greek mathematician and physicist Archimedes. -Design a weapon with a lever system. -Annotate drawings and sketches showing design features of the catapult. Make: -Know how certain levers can cause direct movement and motion. -Ensure that the Roman weapon looks authentic. -Make sure the Roman weapon is stable and has a working lever system. Evaluate: -Test their Roman weapon in a variety of different ways. -Evaluate the product they have made and evaluate whether it's functions are fit for purpose. Technical knowledge: -Create a product that incorporates at least one lever.			<u>Unit: Food Technology</u> Driver: How do we prepare afternoon tea for a small group? Design: -Research what items are normally included in traditional afternoon tea. -Decide who to invite to the afternoon tea and create a menu for it. Make: -Select the correct utensils needed to make sandwiches and cakes and know how to use them appropriately, from previous projects. -Know whether an ingredient is sweet or savoury and what ingredients work together. Evaluate: -Know how to make a product appealing to the audience. -Be able to use senses to improve their product throughout. Technical knowledge: -Bring a creative element to the food product being designed. -Know which season various foods are available for harvesting. -Recognise safe practices in the kitchen and can identify hazards e.g. hazards when using an oven.	<u>Unit: Textiles</u> Driver: How can I use back stitch, blanket stitch and material to create textured fabric art? Design: -Research what happened at the Greek Olympics. -Research flags in the past and now. -Research designers of Olympic flags. -Decide on which stitches suit your flag design. Make: -Understand what type of needles need to be used to suit the material you are using. -Sew, weave or stitch using previous knowledge for accuracy. -Think about how to join materials together and use the appropriate method. Evaluate: -Explain what has been altered and why. -Discuss if the flag is fit for purpose and say and make changes as needed. Technical knowledge: -Use appropriate sewing techniques, such as a running or blanket stitch.
----------------------	--	--	--	--	--	---	---

-Evaluate products for both their purpose and appearance. -Evaluate their own and others work. -Evaluate their product, carrying out appropriate tests. -Evaluate their product both during and at the end of the assignment. -Be able to disassemble and evaluate familiar products and consider the views of others to improve them. -Know how to use a range of techniques, such as peeling, chopping, slicing, gracing, mixing, spreading, kneading and baking. -Know that to be active and healthy, food and drink are needed to provide energy for the body.							
--	--	--	--	--	--	--	--

Year 5	-Competently research products similar to the one they are intending to design and evaluate strengths and weakness to be incorporated into their own design. -Design, with a range of initial ideas, after collecting information from investigating existing products. -Produce a detailed, step-by-step plan. -Explain how a product will appeal to a specific audience and how it meets the purpose. -With growing confidence, apply a range of finishing techniques including those from art and design. -Start to appreciate how much the product costs to make. -Name and use a range of tools and equipment competently. -Select appropriate materials, tools and technique (e.g. 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. -Know how more complex electrical circuits and components can be used to create functional products. -Make a prototype before making a final version. -Evaluate a product against original design specifications and by carrying out tests. -Suggest alternative plans; outlining the positive features and drawbacks. -Evaluate appearance and function against original criteria. -Begin to evaluate their product personally and seek evaluation from others.		<u>Unit: Mechanisms and Structures</u> Driver: To create a water mill system incorporating gears Design: -Explore how different mills work via a range of sources. -Take account of gear systems in the design. -Start with researching Philo of Byzantium, who created one of the first water mills recorded. -Explore how mills have changed over time and what style might be used in their own project. Make: -Make a water mill, that incorporates gears and show it working. -Take time to ensure that the gear system is working well and stands up to continuous use. Evaluate: -Being adaptable to changing things in the moment when something isn't working. -Explore alternative options and evaluate what is best. Technical knowledge: -Use a gear system within the watermill produced.		<u>Unit: Textiles</u> Driver: To design a blanket that tells a historical story, incorporating the technique of applique Design: -Research Bayeux tapestry via a range of sources. -Create initial designs of an aspect of history studied that can be created using different fabrics. -Think about whether the product is aesthetically pleasing, as well as purposeful. Make: -Use a range of stitching techniques, including applique, to create the end product. -Add a degree of accuracy to joining, shaping and finishing the product. -Refine finishing a product and being precise in the end product. Evaluate: -Think about how to adapt the project and it's pros and cons. -Evaluate against the original criteria and design brief. Technical knowledge: -Use a range of sewing techniques, including applique and stitching taught previously,	<u>Unit: Food Technology</u> Driver: To design and make a fruit crumble Design: -Work out the cost of ingredients. - Create their own recipe based upon research. -Ask adults in the school about their fruit crumbles (kitchen staff). Make: -Measure accurately and hygienically. -Prepare a range of fruit carefully and safely, with appropriate utensils. -Follow their recipe step by step and make sure they have enough of each ingredient. Evaluate: -Create a tasting survey from peers or family. -Explain what they might change when making the fruit crumble again. Technical knowledge: -Be both hygienic and safe in the kitchen. -Know how to prepare a meal by collecting the ingredients in the first place. -Weigh and measure accurately (timings, dry ingredients and liquids). -Understand how food is processed into ingredients that can be eaten or used in cooking. -Begin to understand that different food and drink contain different substances, such as nutrients, water and fibre, that are needed for health.	
---------------	---	--	---	--	--	---	--

Year 6	-When researching, be competent in discriminating as to what would be and would not be helpful for their intended product. -Use market research of existing products to inform their design. -Follow and refine original plans, justifying it in a convincing way -Show that culture and society is considered in plans and design specification. -Show thought has been given to materials relating to recycling and sustainability. -Confidently select appropriate tools, materials, components and techniques and use them efficiently. -Know what each tool is used for. -Explain why a specific tool is best for a specific action. -Make modifications as they go along and explain their reasons. -Construct products using permanent joining techniques. -Use finishing techniques to strengthen and improve the appearance of their products. -Test and evaluate designed products. -Evaluate product against clear criteria. -Record their evaluations using drawing with labels. -Be both hygienic and safe. -Weigh and measure accurately (timings, dry ingredients and liquids). -Begin to understand that seasons may affect the food available. -Understand how food is processed into ingredients that can be eaten or used in cooking. -Begin to understand that different food and drink contain different substances - nutrients, water and fibre - that are needed for health.			Unit: Textiles Driver: How can we create a camouflaged nomadic tent that would be suitable for a desert? Design: -Research what a tent needs to be put up/held up. -Research nomadic tribes. -Research Edward Whympers for moveable tents. -Consider the terrain when designing. -market research modern tents and their designs. Make: -Consider the paint used for tie dying. -Select appropriate resources to hold up a tent in high winds. -Make modifications based on how the project is evolving. -Refine sewing and stitching strategies. Evaluate: -Justify the changes made throughout the project. -Be able to explain the constraints of the project based on terrain and skill sets. -Test the end product. Technical Knowledge: -Use knowledge to improve a made product by strengthening, stiffening or reinforcing. -Use a range of sewing techniques to improve the product made.		Unit: Food Technology Driver: How can we make a Stew and a side dish? Design: -Research what a stew is made up of. -Know about seasonal constraints of ingredients. -Research how to prepare vegetables and potentially a meat. -Research how much time each element needs to cook in the dish. Make: -Use a range of tools effectively for the right ingredients. -Follow hygiene guidance. -Prepare for everything to be ready at the same time. Evaluate: -Peer review their stew. -Consider the constraints of the project and how they could improve them. Technical Knowledge: -Explain how food ingredients should be stored and give reasons. -Work within a budget to create a meal. -Understand the difference between a savoury and sweet dish. -Know how to prepare and cook a variety of predominantly savoury dishes safely and hygienically, including where appropriate, the use of a heat source.	Unit: Mechanisms and Structures Driver: How can we create a traffic light system that involves the use of IT? Design: -Research how traffic systems work. -Understand the crumble system and how electrical components work. Make: -Create a prototype to check that the process works. -Know how more complex electrical circuits and components can be used to create functional products and how to program a computer to monitor changes in the environment and control their products. Evaluate: -Adjust IT processes to create a more functional product. -Converse with others to overcome constraints. Technical Knowledge: -Know which IT product would further enhance a specific product. -Use electrical systems correctly and accurately to enhance a given product.
----------------------	--	--	--	--	--	---	---

Skills Coverage by Year Group

Skills	Mechanisms	Structures	Textiles	Food Technology (Cooking & Nutrition)
EYFS				
Y1				
Y2				
Y3				
Y4				
Y5				
Y6				

Key Vocabulary

Disciplinary Vocabulary							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design	Nursery: - Think - Draw - Ideas - Books Reception: As Nursery + - Design - Simple Plan - Pictures - Fiction - Non-Fiction	As Reception + - Own ideas - Product - Move/s - Plan - Making/make - Words - Research - Internet - Website - Leaflet	As Year 1 + - Choose - Best Tools - Reasons - Describe - Diagrams - Models - Develop - Starting Point	As Year 2 + - Explain - Criteria - Attractive - Detailed Plan - Order - Equipment - Appropriate - Heritage - Archive	As Year 3 + - Influence - Designers - Design Brief - Audience - Produce - Original	As Year 4 + - Range of Ideas - Collate Information - Prototype - Sources - Alternative Plans - Cost	As Year 5 + - Market Research - Inform - Refine - Justify - Convince - Culture - Society - Constraints
Make	Nursery: - Build - Make Reception: As Nursery + - Create - Materials - Tools - Join - Weave - Refer to simple plan	As Reception + - Own Ideas - Plan - Product - Features - Resources - Talk - Structure/model Strong/er - Arrange - Construct - Shape - Mould	As Year 1 When Applicable + - Choose - Components - Method - Different Ways - Measure - Model - Structure - Movement - Stitch - Health and Safety	As Year 2 When Applicable + - Follow - Equipment - Select - Appropriate - Techniques - Accurate	As Year 3 When Applicable + - Lever system - Precise - Fit for purpose	As Year 4 When Applicable + - Gear System - Applique	As Year 5 When Applicable + - Electrical component - Sew
Evaluate	Nursery: - Like - Don't Like Reception: As Nursery + - Better - Worse	As Reception - Describe - Working Well - Not Working Well - Simple Improvements - Self-Review	As Year 1 When Applicable + - Consider - How - Detailed Improvements - Peer Review	As Year 2 When Applicable + - Explain - Know - Why - Successful - Not Successful - Changes	As Year 3 When Applicable + - Suggest - Effective - Altered - Test - Fit for Purpose	As Year 4 When Applicable + - Design brief - Alternative - Features - Original Criteria	As Year 5 When Applicable + - Clear Criteria - Refine - Justify - Constraints

Substantive Knowledge Vocabulary							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Mechanisms	Nursery: - Action-pull, push, press - Slow - Fast Reception: As Nursery + - Speed - Start - Stop - Force - Direction - Materials to join or function- masking tape, split pin etc.	As Reception + - Mechanism - Lever - Slider - Slot - Fastener - Pop-up - Actions- down, up, straight			As Year 1 When Applicable + - Fulcrum - Catapult - Propelling - Lever system 3D frame	As Year 4 When Applicable + - Gear - Cam - Crank handle - Rotational movement - Linear movement - Gear ratio - Pressure angle - Pitch diameter	- User - Fault - Toggle - Switch - Insulator - Conductor - Battery holder - Cell - Crocodile clip - Bulb - Buzzer - Wire - Series circuit/ electrical circuit - Open Switch - Closed Switch - Connection - Electrical safety - Sequence
Structures	Nursery: - Materials- plastic, sand, paper, cardboard. - Junk model - Techniques- stack, join, build Reception: As Nursery + - Materials- wood, metal, fabric, brick - Techniques- enclose, balance, vertically, horizontally, shape, space	As Reception + - Grouping materials- plastic, fabric, metal, wood - Properties- flexible, strong, hollow, waterproof, light. - Joining- glue, Velcro - Tools used- glue gun - Techniques- cut, fold, fix	As Year 1 When Applicable + - Landmark- The Shard, The Gherkin, St Paul's Cathedral, The Tower of London, Angel of The North - Properties- sturdy, heavy, durability - Measurement- ruler, meter stick. - Joining- Sellotape, masking tape	As Year 2 When Applicable + - Monuments- Long Eaton War Memorial Cross, Robin Hood statue, Nottingham War Memorial Gardens, Florence Nightingale monument, Derby Ram statue - Joining- cuts, scores, make holes, tape, pin - Measurement- rulers, protractors, - Describing- three-dimensional, structure, base,	As Year 3 When Applicable + - Structure-focus on shape - Position - Hinge - Expose - Join- tape, bands - Actions- tighten, install, stretch, attach	As Year 4 When Applicable +	As Year 4 When Applicable + - Measurement- Shallow tent, Limited height, cutting wood straight and flat at the bottom. - Upright wood - Joining- pin, sew and stitch

				curved, straight, shapes created Constructional triangle			
Textiles	Nursery: - Materials - See - Touch Reception: As Nursery + 5 senses - Pattern - Material- clay, plasticine, slime, fabric - Technique- mould, shape, stretch, pinch, squeeze, twist, splat, flatten, cut, weave, join	As Reception When Applicable + - Template - Material/Fabric - Textiles - Mark out - Measure - Decorate - Joining- glue, velcro etc - Tools- glue gun, hole punch.	As Year 1 When Applicable + - Thread - Needle - Eye - Hook and eye - Binca - Techniques- running stitch, join, knot - Appearance- camouflage	As Year 2 When Applicable + - Floormat making - Weaving terminology - Weaving Loom - Texture - Types of textiles- woven, knitted, lace, felt - Design- pattern (colour, fabric etc)	As Year 3 When Applicable + - Zip - Button - Template quality - Mock-up - Seam - Fastening - Function - Prototype - Techniques- back stitch, blanket stitch	As Year 4 When Applicable + - Techniques- embellish, embroidery, applique, overstitch - Tapestry - Functional properties - Aesthetical properties	As Year 5 When Applicable + - Stitch of choice - Sewing machine (strengthen edge of material) - Bias binding - Tie dye
Food Technology	Nursery: - Sanitise - Action- stir, cut, eat. - Equipment- fork, knife, spoon, bowl, plate, pan, pot - Healthy & unhealthy Reception: As Nursery + - Apron - Action- mix, chop - Equipment- whisk, wooden spoon, measuring	As Reception When Applicable + - Hygiene - Sandwich - Ingredients- food product names for sandwiches - Grouping items to healthy or not healthy - Action- spread, grate, wash, rinse	As Year 1 When Applicable + - Ingredients- food product names for pizza (dough, toppings) - Types of pizza names- margherita, pepperoni, Hawaiian, vegetarian etc - Names of equipment and utensils- spatula, pizza cutter, oven - Method- measure, weigh, amount - Cooking actions- e.g. slicing, peeling, cutting, squeezing. - Healthy diet- balanced, portions	As Year 2 When Applicable + - Ingredients- food product names for cupcakes and scones (flour, eggs, butter, sugar, milk, baking powder, butter cream, jam) - Names of equipment and utensils- weighing scales, measuring cups, sieve - Cooking actions- kneading, baking - Method- measure- specific	As Year 3 When Applicable + - Ingredients- food product names for afternoon tea - Food groups- carbohydrates, fats, protein and fruit and vegetables. - Process of a food product- processed, harvested, seasonal, grown, reared, caught, frozen, tinned. - Sweet or savoury - Simple sensory vocabulary e.g. soft, juicy.	As Year 4 When Applicable + - Ingredients- food product names for fruit crumble (fruit, sugar, flour, butter, custard) - Parts of a product- e.g. skin, seed, pip, core - Names of equipment and utensils- fan oven, microwave, pie dish) - Recipe - Budget	As Year 5 When Applicable + - Focus on additional ingredients/content of ingredients- sugar, salt, herbs, spices - Food Storage- chilled, frozen, shelf- stable, fridge, freezer, cupboard, pantry etc. - Allergies and Intolerances.

	spoons, baking tray			units used, temperature	crunchy, sweet, sticky, smooth, sharp, crisp, sour, hard flesh Names of serving equipment- china cup, tea pot, cutlery needed.		
--	---------------------	--	--	-------------------------	--	--	--