



Design and Technology Curriculum: Year 6

What are the aims and intentions of this curriculum?

That by the end of KS2, children:

Design

- use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

Make

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities

Evaluate

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

Technical knowledge

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors] ☑ apply their understanding of computing to program, monitor and control their products

Cooking and Nutrition

- 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.

Term	Topic	Knowledge <i>*Technical Knowledge</i>	Skills <i>*Design *Make *Evaluate</i>	Vocabulary
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<p>1</p>	<p>Structures: Playgrounds</p>	<p>To know that structures can be strengthened by manipulating materials and shapes To understand what a 'footprint plan' is To understand that in the real world, design, can impact users in positive and negative ways To know that a prototype is a cheap model to test a design idea</p>	<p>Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs Building a range of play apparatus structures drawing upon new and prior knowledge of structures Measuring, marking and cutting wood to create a range of structures Using a range of materials to reinforce and add decoration to structures Improving a design plan based on peer evaluation Testing and adapting a design to improve it as it is developed Identifying what makes a successful structure</p>	<p>Adapt, Apparatus, Bench hook, Cladding, Coping saw, Design, Dowel, Evaluation, Feedback, Idea, Jelutong, Landscape, Mark out, Measure, Modify, Natural materials, Plan view, Playground, Prototype, Reinforce, Sketch, Strong, Structure, Tenon saw, Texture, User, Vice, Weak</p>
<p>2</p>	<p>Mechanical systems: Automata toys</p>	<p>To understand that the mechanism in an automata uses a system of cams, axles and followers To understand that different shaped cams produce different outputs To know that an automata is a hand powered mechanical toy To know that a cross-sectional diagram shows the inner workings of a product To understand how to use a bench hook and saw safely To know that a set square can be used to help mark 90° angles</p>	<p>Experimenting with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement Understanding how linkages change the direction of a force Making things move at the same time Understanding and drawing cross-sectional diagrams to show the inner-working Measuring, marking and checking the accuracy of the jelutong and dowel pieces required Measuring, marking and cutting components accurately using a ruler and scissors Assembling components accurately to make a stable frame Understanding that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles Selecting appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set Evaluating the work of others and receiving feedback on own work</p>	<p>Accurate, Assembly-diagram, Automata, Axle, Bench hook, Cam, Clamp, Component, Cutting list, Diagram, Dowel, Drill bits, Exploded-diagram, Finish, Follower, Frame, Function, Hand drill, Jelutong, Linkage, Mark out, Measure, Mechanism, Model, Research, Right-angle, Set square, Tenon saw</p>



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			Applying points of improvements Describing changes they would make/do if they were to do the project again	
3	Electrical systems: Steady hand game	<p>To know that batteries contain acid, which can be dangerous if they leak</p> <p>To know the names of the components in a basic series circuit including a buzzer</p> <p>To know that 'form' means the shape and appearance of an object</p> <p>To know the difference between 'form' and 'function'</p> <p>To understand that 'fit for purpose' means that a product works how it should and is easy to use</p> <p>To know that form over purpose means that a product looks good but does not work very well</p> <p>To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind</p> <p>To understand the diagram perspectives 'top view', 'side view' and 'back'</p>	<p>Designing a steady hand game - identifying and naming the components required</p> <p>Drawing a design from three different perspectives</p> <p>Generating ideas through sketching and discussion</p> <p>Modelling ideas through prototypes</p> <p>Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'</p> <p>Constructing a stable base for a game</p> <p>Accurately cutting, folding and assembling a net</p> <p>Decorating the base of the game to a high-quality finish</p> <p>Making and testing a circuit</p> <p>Incorporating a circuit into a base</p> <p>Testing own and others finished games, identifying what went well and making suggestions for improvement</p> <p>Gathering images and information about existing children's toys</p> <p>Analysing a selection of existing children's toys</p>	<p>Assemble, Battery, Battery pack, Benefit, Bulb, Bulb holder, Buzzer, Circuit, Circuit symbol, Component, Conductor, Copper, Design, Design criteria, Evaluation, Fine motor skills, Fit for purpose, Form, Function, Gross motor skills, Insulator, LED, User</p>
4	Digital world: Navigating the world	<p>To know that accelerometers can detect movement</p> <p>To understand that sensors can be useful in products as they mean the product can function without human input</p> <p>To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request</p> <p>To know that 'multifunctional' means an object or product has more than one function</p>	<p>Writing a design brief from information submitted by a client</p> <p>Developing design criteria to fulfil the client's request</p> <p>Considering and suggesting additional functions for my navigation tool</p> <p>Developing a product idea through annotated sketches</p> <p>Placing and manoeuvring 3D objects, using CAD</p> <p>Changing the properties of, or combine one or more 3D objects, using CAD</p> <p>Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo)</p>	<p>3D CAD, Application (apps), Biodegradable, Boolean, Cardinal compass, Client, Compass, Concept, Convince, Corrode, Duplicate, Environmentally friendly, Equipment, Feature, Finite, Function, Functional, GPS tracker, If statement, Infinite</p>



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		<p>To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing</p>	<p>Explaining material choices and why they were chosen as part of a product concept Programming an N,E,S,W cardinal compass Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool Developing an awareness of sustainable design Identifying key industries that utilise 3D CAD modelling and explain why Describing how the product concept fits the client's request and how it will benefit the customers Explaining the key functions in my program, including any additions Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch Demonstrating a functional program as part of a product concept</p>	<p>Investment, Lightweight, Loop, Manufacture, Materials (wood, metal, plastic etc.), Mouldable, Navigation, Non-recyclable, Product lifecycle, Product lifespan, Program, Recyclable, Smart, Sustainable, Sustainable design, Unsustainable design, Variable, Work plane</p>
5	<p>Food: Come dine with me</p>	<p>To know that 'flavour' is how a food or drink tastes To know that many countries have 'national dishes' which are recipes associated with that country To know that 'processed food' means food that has been put through multiple changes in a factory To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork)</p>	<p>Writing a recipe, explaining the key steps, method and ingredients Including facts and drawings from research undertaken Following a recipe, including using the correct quantities of each ingredient Adapting a recipe based on research Working to a given timescale Working safely and hygienically with independence Evaluating a recipe, considering: taste, smell, texture and origin of the food group Taste testing and scoring final products Suggesting and writing up points of improvements in productions Evaluating health and safety in production to minimise cross contamination</p>	<p>Accompaniment, Collaboration, Cookbook, Cross-contamination, Equipment, Farm, Flavour, Illustration, Imperative-verb, Ingredients, Method, Nationality, Preparation, Processed, Reared, Recipe, Research, Storyboard, Target audience, Top tips, Unit of measurement</p>