



Cedars Park Primary School

Design and Technology Long Term Plan

Intent

Design and Technology is an inspiring, rigorous and practical subject. At Cedars Park, we value the creative curriculum and believe that it can have a powerful and positive effect on children, helping them to become confident, creative learners who are able to express their individual interests, thoughts and ideas. We ensure that our curriculum is accessible for all to enable all learners, including those with Special Educational Needs (SEN). This is achieved by our planning being adapted to meet the needs and abilities of all. Where there are barriers, we pride ourselves on embracing different approaches, seizing new opportunities to ensure high-quality learning, and making reasonable adjustments.

We encourage the children to use their creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts considering their own and others' needs, wants and values. We aim to make links to designs and designers throughout history, providing opportunities for children to critically reflect upon and evaluate others' designs and the overall effectiveness of the product before evaluating their own. As pupils progress, we support them to be able to think critically and develop a more rigorous understanding of design and technology.

Through DT work in the classroom, the children at Cedars Park have the opportunity to develop their skills in mechanisms, structures, textiles, mechanical systems, electrical systems and cooking and nutrition. These areas are developed continuously throughout the school from Early Years through to Year 6 and the children have the opportunity to revisit skills from previous years before learning new ones. We encourage children to express individuality in their work and to keep their own personalised sketchbooks where they can explore ideas, be inventive and take risks. When children leave Cedars Park, we expect them to have a wide range of well-developed skills in the areas of our curriculum that they can then build on and develop further as they continue in their education.

Implementation

At Cedars Park, DT is taught each half term with key skills covered in every group, tailored to meet individual pupils' needs, including those with SEN. Teachers plan sequences of lessons that build on and develop the children's skills culminating in a final piece.

The skills and knowledge that children develop throughout each DT topic are mapped across each year group and across the school to ensure progression. The teaching of DT across the school follows the National Curriculum through the use of planning resources from Kapow Primary, adapted to suit our curriculum topics. Children design products with a purpose in mind and an intended user of the products. Food technology is implemented across the school with children developing an understanding of where food comes from, the importance of a varied and healthy diet and how to prepare this.



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The teaching of DT follows the design, make and evaluate cycle, with technical knowledge and relevant vocabulary shared at each stage. The design process is always linked to real life, relevant contexts to give meaning to learning. When making their products, the children are given choice and a wide range of tools and materials to choose from. When evaluating, the children are taught to evaluate their own products against the initial design criteria to see how well it has met the needs and wants of the intended user and to identify any changes that could be made.

Impact

The impact of our DT curriculum can clearly be seen in the children’s sketchbooks which pass on with them to the following year group. At the beginning of each unit, a detailed medium term plan outlines the main learning objectives alongside the skills that the children will build on and those which will follow. The opportunity to evaluate and reflect on the learning is planned for towards the end of the unit to enable the children to see how their learning is progressing and where they need to take it next. Throughout the unit of work, key assessment success criteria are identified and the children are able to self-assess against them. Class teachers then use the children’s research and preparatory work, along with the final piece in order to make a judgement as to whether each child is working towards, at or above the expected level.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Early Years	<ul style="list-style-type: none"> • Making binoculars • Joining materials • Representing skeletons using mixed media • Make a house for a goldilocks and the wolf • Class bird making - papercraft 	<ul style="list-style-type: none"> • Design and make gingerbread men • Construct a tower for Rapunzel • Christmas crafts, decorations, Christmas cards 	<ul style="list-style-type: none"> • clay/plasticine dinosaur modelling • Police hats • Junk modelling - emergency vehicles focussing on moving parts • Concertina animal puppets 	<ul style="list-style-type: none"> • Mixed media vehicle making • Junk modelling space vehicles • Design a new way to travel • Flag designing and making 	<ul style="list-style-type: none"> • Spider hand puppets • Webs that shine and glimmer in the sun 	<ul style="list-style-type: none"> • Make a swinging monkey with moving parts • Recycled milk bottle elephants

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<p>Year 1</p>	<p>Structures: Constructing a Windmill</p> <ul style="list-style-type: none"> ● Include individual preferences and requirements to a design ● Make a stable structure ● Assemble components of a structure ● Evaluate and adapt a design 	<p>Mechanisms: Making a Moving Story Book</p> <ul style="list-style-type: none"> ● Explore making mechanisms ● Design a moving story book ● Construct a moving picture ● Evaluate a finished product 	<p>Mechanisms: Wheels and Axles</p> <ul style="list-style-type: none"> ● Understand how wheels move ● Identify what stops a wheel from turning ● Design a moving vehicle ● Build a moving vehicle 	<p>Textiles: Puppets</p> <ul style="list-style-type: none"> ● Accurately join fabrics together using different methods ● Use a template to create a design ● Embellish a design using joining methods 	<p>Food: Fruit and Vegetables</p> <ul style="list-style-type: none"> ● Identify if a food is a fruit or vegetable ● Identify where plants grow and which parts we eat ● Taste and compare fruit and vegetables ● Make fruit and vegetable smoothies 	<ul style="list-style-type: none"> ★ Celebrate KS1's achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units.
<p>Year 2</p>	<p>Food: A balanced diet</p> <ul style="list-style-type: none"> ● Know what makes a balanced diet ● Taste test food combinations ● Taste test food combinations ● Make a healthy wrap 	<ul style="list-style-type: none"> ★ Celebrate KS1's achievements in D&T, with a gallery of their products. ★ Set an invention challenge with scrap materials. ★ Extra-curricular trips. ★ Overflow time to complete units. 	<p>Mechanisms: Making a moving monster</p> <ul style="list-style-type: none"> ● Look at objects and understand how they move ● Look at objects and understand how they move ● Explore different design options ● Make a moving monster 	<p>Structures: Baby Bear's chair</p> <ul style="list-style-type: none"> ● Explore the concept and features of structures and the stability of different shapes ● Explore strength in different structures ● Understand that the shape of the structure affects its strength ● Make a structure according to design criteria ● Produce a finished structure 	<p>Textiles: Pouches</p> <ul style="list-style-type: none"> ● Sew a running stitch ● Sew a running stitch ● Join fabrics using a running stitch ● Decorate a pouch using fabric glue or stitching 	<p>Mechanisms: Fairground Wheel</p> <ul style="list-style-type: none"> ● Explore wheel mechanisms and design a wheel ● Select appropriate materials ● Build and test a moving wheel ● Make and evaluate a structure with a rotating wheel

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				<ul style="list-style-type: none"> Evaluate the strength, stiffness and stability of their structure 		
Year 3	<p>Mechanical Systems: Pneumatic toys</p> <ul style="list-style-type: none"> Draw diagrams with correct labels, arrows and explanations Identify definitions for key terms Identify five appropriate design criteria Communicate two ideas using thumbnail sketches Communicate and develop one idea using an exploded diagram Select appropriate equipment and materials to build a working pneumatic system Assemble pneumatic system within the housing to create the desired motion 	<p>Food: Eating seasonally</p> <ul style="list-style-type: none"> Explain that fruits and vegetables grow in different countries based on their climates Understand that 'seasonal' fruits and vegetables are those that grow in a given season and taste best then Know that eating seasonal fruit and vegetables has a positive effect on the environment Design their own tart recipe using seasonal ingredients Understand the basic rules of food hygiene and safety Follow the instructions within a recipe 	<p>Digital World: Electronic charm</p> <ul style="list-style-type: none"> Explain the digital revolution Suggest features from the Micro:bit suitable for an eCharm Write a program that initiates a flashing LED panel Debug code Explain basic functionality of the finished program Suggest key features for a pouch with consideration for the theme and user Use a template when cutting Describe 'point of sale display' <p>Follow basic design requirements using CAD (computer-aided design)</p>	<p>Textiles: Cross-stitch and applique cushions or Egyptian collars</p> <ul style="list-style-type: none"> Use a cross-stitch to join two pieces of fabric Design and cut the template for a cushion Use cross-stitch and applique to decorate a cushion face Make a cushion that includes applique and cross-stitch 	<p>Electrical Systems: Electric poster</p> <ul style="list-style-type: none"> Explain what 'information design' is and understand what could happen if we had no signage in public places Research and choose a specific topic on which to base their initial poster ideas Complete design criteria based on a client's request Sketch four initial poster ideas and indicate where a bulb will be located Review initial ideas against the design criteria Assemble electric poster including a functional simple 	<p>Structures: Constructing a castle</p> <ul style="list-style-type: none"> Draw and label a simple castle that includes the most common features Recognise that a castle is made up of multiple 3-D shapes Design a castle with key features which satisfy a given purpose Score or cut along lines on the net of a 2-D shape Use glue to securely assemble geometric shapes Utilise skills to build a complex structure from simple geometric shapes Evaluate their work by answering simple questions

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<p>Year 4</p>	<p>Structures: Pavilions</p> <ul style="list-style-type: none"> ● Produce a range of free-standing frame structures of different shapes and sizes ● Design a pavilion that is strong, stable and aesthetically pleasing ● Select appropriate materials and construction techniques to create a stable, free-standing frame structure ● Select appropriate materials and techniques to add cladding to their pavilion 	<p>Mechanical Systems: Making a slingshot car</p> <ul style="list-style-type: none"> ● Make an accurate, functioning car chassis ● Design a shape that is suitable for the project ● Attempt to reduce air resistance through the design of the shape ● Produce panels that will fit the chassis and can be assembled effectively using the tabs they have designed ● Construct car bodies ● Conduct a trial accurately and draw conclusions and improvements from the results 	<p>Textiles: Fastenings</p> <ul style="list-style-type: none"> ● Identify the features, benefits and disadvantages of a range of fastening types ● Write design criteria and design a sleeve that satisfies the criteria ● Make a template for their book sleeve <p>Assemble their case using any stitch they are comfortable with</p>	<p>Food: Adapting a recipe</p> <ul style="list-style-type: none"> ● Follow a recipe, with some support ● Describe some of the features of a biscuit based on taste, smell, texture and appearance ● Adapt a recipe by adding extra ingredients to it ● Plan a biscuit recipe within a budget 	<p>Digital World: Mindful moments timer</p> <ul style="list-style-type: none"> ● Describe the advantages and disadvantages of existing products (timers). ● Understand how Micro:bit features could be used as part of a design idea. ● Write a program that displays a timer on the Micro:bit based on their chosen seconds/minutes. ● Debug code ● State key functions in the program editor (e.g. loops). ● Cut out a box net carefully, assembling it securely into a box using tape or glue and tabs and ensuring it has a slot for the Micro:bit display. ● Explain the need for 	<p>Electrical Systems: Torches</p> <ul style="list-style-type: none"> ● Identify electrical products and explain why they are useful ● Make a working switch ● Identify the features of a torch and how it works ● Describe what makes a torch successful ● Create suitable designs that fit the success criteria and their own design criteria ● Create a functioning torch with a switch according to their design criteria
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					<p>a company to stand out against competition and/or state the importance of logos in business.</p> <ul style="list-style-type: none"> ● Recall and describe the name and use of key tools used in Sketchup (CAD) software. 	
Year 5	<p>Mechanical Systems: Making a pop-up book</p> <ul style="list-style-type: none"> ● Produce a suitable plan for each page of their book ● Produce the structure of the book ● Assemble the components necessary for all their structures/mechanisms ● Hide the mechanical elements with more layers using spacers where needed ● Use a range of mechanisms and structures to illustrate their story 	<p>Electrical Systems: Doodlers</p> <ul style="list-style-type: none"> ● Identify simple circuit components with an explanation of their function ● Explain that a series circuit is assembled in a loop to allow the electricity to flow along one path ● Describe a motor as a circuit component that changes electrical energy into movement ● Suggest ways to switch the configuration to amend the form or 	<p>Digital World: Monitoring devices</p> <ul style="list-style-type: none"> ● Describe what is meant by monitoring devices and provide an example. ● Explain briefly the development of thermometers from thermoscopes to digital thermometers. ● Research a chosen animal's key information to develop a list of design criteria for an animal monitoring device. ● Write a program that monitors the ambient 	<p>Food: What could be healthier?</p> <ul style="list-style-type: none"> ● Understand how beef gets from the farm to our plates ● Present a subject as a poster with clear information in an easy to read format ● Contribute ideas as to what a 'healthy meal' means ● Notice the nutritional differences between different products and recipes ● Recognise nutritional differences between two similar recipes and give some 	<p>Structures: Bridges</p> <ul style="list-style-type: none"> ● Identify stronger and weaker shapes ● Recognise that supporting shapes can help increase the strength of a bridge, allowing it to hold more weight ● Identify beam, arch and truss bridges and describe their differences ● Use triangles to create simple truss bridges that support a load (weight) ● Cut beams to the correct size, using a cutting mat 	<p>Textiles: Design a stuffed toy</p> <ul style="list-style-type: none"> ● Design a stuffed toy, considering the main component shapes of their toy ● Create an appropriate template for their stuffed toy ● Join two pieces of fabric using a blanket stitch ● Neatly cut out their fabric ● Use appliqué or decorative stitching to decorate the front of their stuffed toy ● Use blanket stitch to assemble their stuffed

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	<p>and make it interactive for the users</p> <ul style="list-style-type: none"> ● Use appropriate materials and captions to illustrate the story 	<p>function of the Doodler</p> <ul style="list-style-type: none"> ● Explain each of the changes they made and the effect this had on the Doodler's ability to draw scribbles (function) and appearance (form) ● Develop design criteria ● Explain why their Doodler has a certain configuration based on the findings of their investigation ● Create a functional Doodler that creates scribbles on paper with or without a switch ● Explain the steps to assemble a Doodler as part of a set of instruction 	<p>temperature and alerts someone when the temperature moves from a specified range.</p> <ul style="list-style-type: none"> ● Identify errors (bugs) in the code and ways to fix (debug) them. ● State one or two facts about the history and development of plastic, including how it is now affecting planet Earth. ● Build a variety of brick models to invent Micro:bit case, housing and stand ideas, evaluating the success of their favourite model. ● 	<p>justification as to why this is</p> <ul style="list-style-type: none"> ● Work as a team to amend a bolognese recipe with healthy adaptations ● Follow a recipe to produce a healthy bolognese sauce ● Design packaging that promotes the ingredients of the bolognese 	<ul style="list-style-type: none"> ● Smooth down any rough cut edges with sandpaper ● Follow each stage of the truss bridge creation as instructed by their teacher ● Complete a bridge, with varying ranges of accuracy and finish, supported by the teacher ● Identify some areas for improvement, reinforcing their bridges as necessary 	<p>toy, repairing when needed</p> <ul style="list-style-type: none"> ● Identify what worked well and areas for improvement
Year 6	<p>Digital World: Navigating the world</p> <ul style="list-style-type: none"> ● Incorporate key information from a client's design 	<p>Food: Come dine with me</p> <ul style="list-style-type: none"> ● Find a suitable recipe for their course ● Record the relevant 	<p>Structures: Playgrounds</p> <ul style="list-style-type: none"> ● Create five apparatus designs, applying the design criteria to their 	<p>Textiles: Waistcoats</p> <ul style="list-style-type: none"> ● Consider a range of factors in their design criteria and use this to create a waistcoat 	<p>Electrical systems: Steady hand game</p> <ul style="list-style-type: none"> ● Explain simply what is meant by 'form' (the shape of a product) 	<p>Mechanical Systems: Automata toys</p> <ul style="list-style-type: none"> ● Mark, saw and cut out the components and supports of their toy



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	<p>request such as 'multifunctional' and 'compact' in their design brief</p> <ul style="list-style-type: none"> ● Write a program that displays an arrow to indicate cardinal compass directions with an 'On start' loading screen ● Identify errors (bugs) in the code and suggest ways to fix (debug) them ● Self and peer evaluate a product concept against a list of design criteria with basic statements ● Identify key industries that use 3D CAD modelling and why ● Recall and describe the name and use of key tools used in Tinkercad (CAD) software ● Combine more than one object to develop a finished 3D CAD model in Tinkercad 	<p>ingredients and equipment needed</p> <ul style="list-style-type: none"> ● Follow a recipe, including using the correct quantities of each ingredient ● Write a recipe, explaining the process taken ● Explain where certain key foods come from before they appear on the supermarket shelf 	<p>work</p> <ul style="list-style-type: none"> ● Make suitable changes to their work after peer evaluation ● Make roughly three different structures from their plans using the materials available ● Complete their structures, improving the quality of their rough versions and applying some cladding to a few areas ● Secure their apparatus to a base ● Make a range of landscape features using a variety of materials which will enhance their apparatus 	<p>design</p> <ul style="list-style-type: none"> ● Use a template to mark and cut out a design ● Use a running stitch to join fabric to make a functional waistcoat ● Attach a secure fastening, as well as decorative objects ● Evaluate their final product 	<p>and 'function' (how a product works)</p> <ul style="list-style-type: none"> ● State what they like or dislike about an existing children's toy and why ● Learn about skills developed through play and apply this knowledge in a survey of one or more children's toys ● Identify the components of a steady hand game ● Design a steady hand game of their own according to their design criteria, using four different perspective drawings ● Create a secure base for their game, with neat edges, that relates to their design ● Make and test a functioning circuit and assemble it within a case 	<p>with a varying degree of accuracy to the intended measurements</p> <ul style="list-style-type: none"> ● Follow health and safety rules, taking care with the equipment ● Attempt a partial assembly of their toys using an exploded-diagram, following a teacher's demonstration ● Develop a design idea with some descriptive notes ● Explore different cam profiles and choose three for their follower toppers with an explanation of their choices ● Create neat, decorated follower toppers with some accuracy ● Measure and cut panels that fit with some inaccuracies to conceal the inner workings of the
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	<ul style="list-style-type: none">• Complete a product pitch plan that includes key information					<p>automata</p> <ul style="list-style-type: none">• Decorate and finish the automata to meet the design criteria• Evaluate their finished product, making descriptive and reflective points on function and form
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