DT Spring Overview

DT	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Unit	Textiles: Puppets	Mechanisms: Fairground wheel	Digital world: Wearable technology	Mechanical systems: Making a slingshot car	Mechanical systems: Making a pop up book	Structure: Playground
Outline	Explore methods of joining fabric. Design and make a character-based hand puppet using a preferred joining technique, before decorating. Example theme: Storybook character. Alternative theme: Easter animals.	Building a rotating fairground wheel with a free-standing structure, this unit offers a simplified wheel design made from repurposed materials and an additional lesson where children design and conduct a survey to gather opinions.	Designing digital wearable technology and developing a program and housing for a Micro:bit, this unit includes new teacher and pupil videos, with an increased focus on evaluation and the use of a virtual Micro:bit.	Making and designing mechanical cars that use different methods of movement or creating and developing a car with a working slingshot mechanism.	Designing an eco-bike with gears and pulleys to harness the energy from an exercise bike or creating a functional pop-up book using levers, sliders, layers and spacers to create paper-based mechanisms.	Research existing playground equipment and their different forms, before designing and developing a range of apparatus to meet a list of specified design criteria.
Learning objectives	• To join fabrics together using different methods. • To use a template to create my design. • To join two fabrics together accurately. • To embellish my design using joining methods	• To explore wheel mechanisms and design a fairground wheel. • To select materials with appropriate properties. • To build and test a moving wheel. • To conduct a simple survey to gather opinions. • To finish and evaluate a structure with a rotating wheel.	• To research and evaluate existing products. • To develop design criteria. • To use code to program and control a product. • To develop and communicate ideas. • To develop ideas through computer-aided design. • To improve a design based on feedback	• To build a car chassis. • To design a shape that reduces air resistance. • To make a model based on a chosen design. • To assemble and test my completed product.	• To design a pop-up book. • To follow my design brief to make my popup book. • To use layers and spacers to cover the working of mechanisms. • To create a high-quality product suitable for a target user.	• To design a playground with a variety of structures. • To build a range of structures. • To improve and add detail to structures. • To create a surrounding landscape.
Key Skills	• Using a template to create a design for a puppet • Cutting fabric neatly with scissors.	• Conducting simple surveys or discussions to gather opinions on what others need or like in a design.	• Problem solving by suggesting potential features on a micro:bit and justifying my ideas	• Designing a shape that reduces air resistance • Drawing a net to create a structure from • Choosing shapes that increase or decrease	• Designing a pop-up book which uses a mixture of structures and mechanisms	• Designing a playground featuring a variety of different structures, giving consideration to how

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	• Using joining methods to decorate a puppet • Sequencing steps for construction • Reflecting on a finished product, explaining likes and dislikes	• Knowing that a survey is used to find out what people like. • Using a simple design brief that outlines the intended use, target user, and key features of the product, to create simple design criteria. • Knowing that a design brief helps to decide what to make. • Knowing that design criteria are the steps for making a product successful. • Creating ideas with design criteria in mind. • Referring to specific parts of existing products when generating ideas. • Knowing that the design criteria help when thinking of ideas. • Using labels to explain parts of a design, label materials, etc. • Integrating moving parts when creating mock-ups. • Knowing that drawings can help explain how something works.	• Drawing and manipulating 2D shapes, using computer-aided design, to produce a point of sale badge • Developing design ideas through annotated sketches to create a product concept • Developing design criteria to respond to a design brief • Following a list of design requirements • Writing a program to control (button press) and/or monitor (sense light) that will initiate a flashing LED algorithm • Analysing and evaluating an existing product • Using feedback from peers to improve a design	speed as a result of air resistance • Personalising a design • Measuring, marking, cutting and assembling with increasing accuracy • Making a model based on a chosen design • Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance	• Naming each mechanism, input and output accurately • Storyboarding ideas for a book • Following a design brief to make a pop up book, neatly and with focus on accuracy • Making mechanisms and/or structures using sliders, pivots and folds to produce movement • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result • Evaluating the work of others and receiving feedback on own work • Suggesting points for improvement	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

		• Knowing that a label explains part of a drawing. • **Make** • Choosing materials, ingredients or components from a wider range of materials, ingredients or components. • Explaining their choices based on the properties of materials and components. • Knowing some properties of materials like hard, soft, flexible, waterproof, strong etc. • Following and recalling simple safety instructions. • Knowing that some tools are sharp like scissors and knives. • Choosing known geometric shapes when making. • Beginning to shape objects to improve how they work. • Knowing the names of some geometric shapes: triangle, pyramid, square, cube, circle, sphere. • Considering balance in their finishing, like evenly spaced decoration.				

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		• **Evaluate** • Discussing a range of existing products and saying what they like and dislike about them. • Evaluating existing products against design criteria. • Evaluating their ideas and creations against simple design criteria. • Knowing that design criteria help to decide if their product is a success. • Suggesting improvements to their peers' designs and products. • Knowing that improve means to make something better. • Knowing that their suggestions can improve someone else's work.				
Key Vocab	Decorate design fabric glue model hand puppet safety pin staple stencil template	design brief design criteria evaluate frame model opinion rotate survey	analogue analyse annotate badge computer-aided design (CAD) control design criteria develop digital digital revolution digital world	chassis energy kinetic mechanism air resistance design structure graphics research model template	criteria design input mechanism model motion reinforce research	apparatus design criteria equipment playground landscape features cladding

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			display electronic electronic products fastening feature feedback form function initiate layers monitor net opinion point of sale product product design program sense simulator smart technology test user			
Key Questions	What do we mean by joining technique? Which picture shows safety pins? Which picture shows stapler and staples? Which picture shows glue Which method of joining fabric needs drying time? When pinning and stapling be extra careful because… What is a template? Which answer describes fabric best?	What is a mechanism? How does a fairground wheel spin? What are design criteria? What is a survey? List the main parts of a fairground wheel.	What key event led to the development of digital technology? What is wearable technology? What is a list of "design criteria"? Why is it important to write a design criteria? A product analysis is when you… What is a loop in programming? What product function could we create using a loop?	What is a mechanism? What is an exploded diagram? What do we mean by aesthetics? What do we mean by graphics? Air resistance is… What is a template? Which view of the car can you see (x3) Why is important to test and evaluate a product?	What is a design brief? What is a list of design criteria? What is a mechanism? What movement do sliders create? What is an input? What is an output? What is a prototype? What is a template? What is an exploded diagram? Draw and explain the mechanism needed for the fish to jump into the	To make a structure stronger____it with more materials. What is the name of the tool (Tonon saw, Coping saw, vice) What is a prototype? Jelutong is a type of… What are the material properties of softwood (pine)? What is the name of this view (plan) To modify something means to…

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	Drawing a design idea first is important because… To make a pouch for holding marbles, which joining technique would be best and why?		Which of these should you add to a product concept drawing? What does the acronym CAD stand for? Explain the purpose of a point of sale display.		opposite/adjacent facing tank.	Explain the health and safety rules for woodwork tools.