



MEDIUM TERM PLANNING

Subject	Topic/Key Question	Year Group	Term	Time Allocation
Design and Technology	Fire Engines	1	Summer 1	6 hours
End of Key Stage 1 outcomes	<p>Design purposeful, functional, appealing products for themselves and other users based on design criteria.</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology</p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</p> <p>Explore and evaluate a range of existing products.</p> <p>Evaluate their ideas and products against design criteria</p> <p>Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their Products</p>			
End of Units outcomes	<p>Mechanical systems</p> <p>I can investigate fire engines, identifying and labelling parts.</p> <p>I know what an axle is.</p> <p>I know what a chassis is.</p> <p>I can explore different ways of using axles, chassis and wheels to create a moving base for a fire engine.</p>			

	<p>I can design a fire engine.</p> <p>I can follow a design to create a moving fire engine.</p> <p>I can evaluate my fire engine.</p>	
Vocabulary	Design	Design, Move, pictures,
	Make	Ideas, make, moves, choose, resources, tools, structure, construct.
	Evaluate	Describe, explain, working well, not working we..
	Technical Textiles, Mechanisms, Materials	Make, stronger, glue, cut, move, mechanisms, scissors, sliders.

Lesson Sequence	Time Allocation	Key Question/WALT	Teaching Activities	Resources
<p>Technical knowledge</p> <p>Lesson 11</p>	1 hours	To explore modern fire engines	<p>Without any prompts or visual clues, ask children to draw a picture of a fire engine on a mini whiteboard or piece of scrap paper. After a few minutes, ask children to share their drawings with a partner, discussing the questions on the slides.</p> <ul style="list-style-type: none"> • What do fire engines need to have? How are fire engines different to other vehicles? Children to think, pair, share their ideas. • Go through the information and pictures of fire engines on the slides. • Ask children to look back at the pictures they drew. Do you need to add anything to your fire engines from what we have learnt? <p>Activity - If possible arrange a visit from the local fire service to explore the fire engine</p>	<p>Plan Bee Lesson 1</p> <p>Slides</p> <p>Resources</p> <p>Worksheet IA/IB/IC/ID/IE</p> <p>Label Cards</p> <p>Picture Card IA/IB (FSD? activity only)</p>

			<ul style="list-style-type: none"> • Provide children with Picture Card 1A in pairs or small groups? What do you think this is? Invite children to share their responses. Explain that this is a fire engine from the time of the Great Fire of London in 1666. Explain that this fire engine (a Keeling fire engine) had a simple pump, was very heavy so very difficult to move, it could only squirt around six pints of water at a time and the fire fighters had to be very close to the fire for the water to reach the blaze. Next, provide children with Picture Card 1B. Let's play 'Spot the Difference'! Give children some time to discuss the similarities and differences between the modern fire engine and the 17th century fire engine. Children can record their findings on worksheet 1E. <p>On worksheet 1B/1C, children to label the picture of the fire engine, describing what each part of the fire engine does.</p> <p>Assessment Questions</p> <p>Can children name the main features of a fire engine?</p> <ul style="list-style-type: none"> • Can children describe the functions of various parts of a fire engine? • Can children label the main features of a fire engine? 	
<p>Technical knowledge</p> <p>Lesson 2</p>	1 hour	To investigate wheels, axles and chassis.	<p>Show children the picture of a fire engine on the slides. How does the fire engine move? Children to think, pair, share their ideas.</p> <ul style="list-style-type: none"> • Go through the information on the slides explaining that wheels on a vehicle need an axle. Show children the two different ways wheels and axles can be used: either having the wheels firmly fixed to the axle so the axle moves the wheels around, or having the wheels loose on the static axle so that the wheels can turn around. 	<p>Plan Bee lesson 2</p> <p>Slides</p> <p>Challenge Sheet</p> <p>Worksheet 2A/2B</p> <p>Wheels and axles (and/or materials that can be used as such)</p>

		<ul style="list-style-type: none"> • Explain what a chassis is and the part it plays in the two different ways wheels and axles can be used. • Tell children that today they will be practising attaching wheels to axles for when they design and make their own fire engines. What different materials do you think we could use for axles? What materials do you think we could use for wheels? What could we use for the chassis? Children to think, pair, share their ideas then go through the suggestions on the slides. <p>Activity</p> <p>Provide children with a variety of different materials for investigating wheels, axles and chassis, e.g. straws, dowelling, pencils, cardboard discs, wooden wheels, card, empty boxes, etc. Give children some time to explore how to create the two types of axles – those that move and those that don't. • After they have had some time to explore, ask the children to choose the materials and methods that they think are best for making wheels move using axles and chassis. Invite children to come to the front of the class to explain why they chose this as their preferred method.</p> <p>Provide children with the Challenge Sheet. Support children in working through the instructions to make two different kinds of chassis out of card. Children will need materials for axles and wheels. These could be cardboard discs and dowelling or straws, or items from a construction kit. Children to then complete worksheet 2B to draw labelled sketches of each.</p> <p>Assessment questions</p> <p>Do children know what wheels, axles and chassis are?</p> <ul style="list-style-type: none"> • Do children know that there are two different ways of attaching wheels to axles? 	<p>Card and cardboard boxes</p>
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			<ul style="list-style-type: none"> • Can children experiment with a range of materials and techniques to combine wheels, axles and chassis? 	
<p>Technical knowledge</p> <p>Lesson 3</p>	1 hour	To be able to investigate ways of creating and decorating the body of a fire engine.	<p>Remind children that in lesson 2 we looked at how to create the basis of a fire engine by joining wheels and axles to a chassis. What else do we need to make a vehicle? Children to discuss ideas.</p> <ul style="list-style-type: none"> • Tell children that today they will be looking at different ways of creating the body of a fire engine. Show children the picture of a fire engine on the slides. What shapes can you see? • Explain that today they will be using lots of different materials to practise making the body of a fire engine. Show children various items on the slides, e.g. boxes, card, cardboard discs, etc. How could you use these items to make the body of a fire engine? What else could you use? Discuss ideas as a class. • Repeat this for making a ladder and a fire hose for a fire engine. You may wish to model some ways of joining different materials and components together, depending on what you have available, or simply let the children investigate for themselves. <p>Tell children that instead of a modern fire engine, they will be designing and making a 17th century fire engine that would have been used during the Great Fire of London.</p> <ul style="list-style-type: none"> • Provide children with worksheet 3C and a variety of materials. Children to spend some time exploring different ways they could make the different parts of the 17th century fire engine, then record their favourite ways on the worksheet. • You may wish to show children this animation of how this fire engine would have worked: https://www.youtube.com/watch?v=xoLK9h-HS_w 	<p>Plan Bee lesson 3</p> <p>Slides</p> <p>Resources</p> <p>Challenge Cards 3A/3B</p> <p>Worksheet 3A/3B/3C</p> <p>Variety of materials, e.g. cardboard boxes, card, wheels, lolly sticks, matchsticks, pipe cleaners, dowelling, etc.</p> <p>Variety of tools, e.g. scissors, sticky tape, glue, etc</p>

			<p>Provide children with a set of Challenge Cards 3A which challenge children to work out different ways to create the body of a fire engine, as well as the doors, windows and ladder. Provide children with a range of materials, such as boxes, cardboard, cotton reels, cardboard discs, dowelling, lolly sticks, etc. Give children some time to investigate each one, then record their findings on worksheet 3A.</p> <p>Assessment questions</p> <p>Can children identify different ways of combining materials to create the body of a fire engine?</p> <ul style="list-style-type: none"> • Can children explore ways of making different parts of a fire engine, such as the ladder? • Can children make decisions about appropriate materials and tools to use for different tasks? 	
<p>Design Lesson 4</p>	1 hours	To be able to design a fire engine.	<p>What have we learnt about fire engines so far? What different ways can we make the different parts of a fire engine? Invite children to share their responses as a class.</p> <ul style="list-style-type: none"> • Explain that today children will be designing their own fire engine so that in the next lesson they can make it. Explain it's important to think carefully about your designs so that your finished products work really well. What would your fire engine model need in order to be successful? What should it be able to do? What should it look like? What should it have? Children to think, pair, share their ideas. Go through the design criteria on the slides. • Go through the questions on the slides together: How will you decorate your fire engine? What materials and tools will you need to make your fire engine? What kind of axles will you use? Children to discuss ideas as a class. 	<p>Plan Bee Lesson 4 Slides Resources Worksheet 4A/4B/4C/4D/4E/4F Picture Card 4A Picture Card 4B (FSD? activity only)</p>

			<p>Activity</p> <p>Give each table a copy of Picture Card 4B and a copy of worksheet 4D or 4E each. Remind children that they will be designing a 17th century fire engine that would have been used during the Great Fire of London.</p> <ul style="list-style-type: none"> • Children to annotate the picture on the worksheet showing what materials they will use to make the body, what kind of wheels and axles they will use, how they will create the barrel, etc. • As an extension, children could describe the steps they will need to take to make their 17th century fire engine on worksheet 4F. <p>Assessment questions</p> <ul style="list-style-type: none"> • Can children design a fire engine to include wheels, axles, chassis and a body? • Can children describe which materials and tools they will need to make their fire engines? • Can children discuss their designs and say what they think and feel about them? 	
<p>Make Lesson 5</p>	1 hour	To be able to make a fire engine based on a design.	<p>Ask children to get out the designs they did in lesson 4 and give them a few minutes to look through them to remind themselves of what they need to do.</p> <ul style="list-style-type: none"> • Children to get into pairs. Ask each child to describe to their partner how they will make their fire engine. What will you do first? When will you decorate your fire engine? How will you put the wheels and axles together? How will you attach the axles to the chassis? • Tell children that today they will be following their designs to make their fire engines. This means there will be lots going on in the classroom and lots of tools, such as scissors, around. How can 	<p>Plan Bee lesson 5</p> <p>Slides</p> <p>Resources</p> <p>Designs from lesson 4</p> <p>Variety of materials dependent on designs, e.g. cardboard boxes, cartons, card, lolly sticks, paper, etc.</p> <p>Variety of tools e.g.</p>

			<p>we make sure we are working safely and sensibly when we are making our fire engines? Children to think, pair, share their ideas</p> <p>Activity</p> <p>Children to follow their designs to create their fire engines.</p> <p>Assessment questions</p> <p>Can children follow a design to create a fire engine?</p> <ul style="list-style-type: none"> • Can children use a variety of materials and tools safely and effectively to create a fire engine? • Can children identify ways in which they could improve their products and amend accordingly? 	<p>scissors, masking tape, glue, etc. Materials for decoration, e.g. paint, crayons, scraps of shiny paper, etc.</p>
<p>Evaluate Lesson 6</p>	<p>1 hour</p>	<p>To be able to evaluate a finished product.</p>	<p>Ask children to place their finished fire engines on their tables. Give the class some time to walk around the classroom to look at the work other children have done. Which fire engines particularly catch your eye? Why? Do all these fire engines move? Children to discuss ideas.</p> <ul style="list-style-type: none"> • Tell children that today they will be evaluating their work. What does the word 'evaluate' mean and why do you think it is important to evaluate a finished product? Children to discuss ideas as a class then go through the explanation on the slides. • Ask children to get into a circle. Look at the questions on the board: What was your favourite part about making your fire engine? What did you find most difficult? For each question, pass around a 'talking object'. As each child takes the object, they give their answer to the question and then pass on to the next child, etc. <p>Activity</p> <p>Take a digital photo of each child with their finished fire engine. Print out the photos and give to the relevant child.</p>	<p>Plan Bee lesson 6</p> <p>Slides</p> <p>Resources</p> <p>Completed fire engines</p> <p>Worksheet 6A/6B</p> <p>Digital cameras (FSD? activity only)</p> <p>A4 paper (FSD? activity only)</p> <p>Question Cards (FSD? activity only)</p>

			<ul style="list-style-type: none">• Children to stick their photo onto the centre of a sheet of A4 paper. Ask children to annotate their photo to explain how well they think they did with the fire engines, what they did really well, what they think they could improve, etc. A set of the Question Cards could be put on each table as a prompt for children to follow. <p>Children to complete the evaluation on worksheet 6A independently.</p> <p>Assessment questions</p> <ul style="list-style-type: none">• Can children evaluate a finished product by identifying what they did well?• Can children evaluate a finished product by identifying what could be improved?• Can children identify ways in which they could improve their work in the future?	
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