Medium Term Plan for Design Technology

Y2 Systems, Structures and Mechanisms
Spring 2

Class Text:
Vlad and the Great Fire of London

Hook: Video of Fire Engine at Work

Topic Outcome: Design and make a working fire engine.

Topic Reflection: Reflect on working mechanisms of a vehicle.

Enquiry: What features does a successful fire engine need?

Vocabulary

EYFS + KS1

Structures, systems and mechanisms
Textiles
Food Technology
Design
Make
Evaluate

KS2

Structures, systems and mechanisms
Textiles
Food Technology
Design
Make
Evaluate

Tier 1: fix, stick, glue, bend, cutting

Tier 2: arranging, products, existing, improvements, evaluate, design, test, make, attach, fixed, free, make, joining.

Tier 3: wheel, axel, chassis, mechanism, fixed, free, design, make, hacksaw, vice, dowel, body, cab.

Previous Skills
Know how to follow safety procedures.
Know what makes an existing product successful.
Able to use drawings to show what they are going to do.

Previous Knowledge
Know some tools needed to make cuts and holes.
Know some materials used to fix or glue things together.

Previous Understanding

Make designs using techniques suggested by teacher. Measure, cut and shape a range of materials.	The names of a range of 2D shapes and some 3D shapes. Know what materials are used for strengthening or stiffening structures. Know simple facts about an important structural engineer.	

	Strand of learning	**Learning Objective**	**Lesson**	**ARE Success Criteria**	**Opportunities for deeper learning**
Lesson 1	Structures, systems and mechanisms.	LO: Evaluating existing products.	Children will watch a fire engine at work. They will explore the different features of a fire engine, such as the ladder, hose, wheels, sirens etc.	I can identify and name the key features of a fire engine.	I can explain what each feature is used for.
Lesson 2	Structures, systems and mechanisms.	LO: Use wheels, axles and chassis.	Children will explore how wheels, axles and chassis work. They will create two different types of chassis and decide which one they prefer to use.	I can explain the role of the wheels, axels and chassis. I can follow instructions to create two different types of chassis.	I can test each chassis, suggesting which I think will be the most successful.
Lesson 3	Structures, systems and mechanisms.	LO: Combine materials	Children will investigate ways of creating and decorating the body of a fire engine.	I can combine different materials to make the body of a fire engine. I can suggest materials to create the ladder and the hose. I can discuss with my partner which method looks the most effective.	I can say which materials would be the most suitable and why.

Lesson 4	Structures, systems and mechanisms.	LO: Design a product using prior knowledge and skills.	Children will design their fire engine, thinking about what features it needs to ensure it works well. They will discuss design criteria, think about decoration and consider the tools and materials they will need to make it.	I can design a fire engine to include: wheels, axles, chassis and a body I can include key features of a fire engine such as lights, a fire hose and a ladder. I can decide what materials I will use to construct my fire engine.	I can provide feedback to my partner on their design.
Lesson 5 N.B. This will need to take place over a series of lessons.	Structures, systems and mechanisms.	LO: Make and test product.	Children will choose suitable materials to make their fire engine. They will fix/stick it using a range of materials such as masking tape and PVA glue. Children will decorate their engines with paint. paper and foil. They will measure the dowel for their axels and fix their wheels. They will attach the chassis to the body.	I can make my body and attach features such as lights, FIRE sign and windows. I can create specific features such as a ladder and hose and attach these securely to the body. I can create the wheels, axles and chassis and attach these securely to the body.	I can make changes as I go to create a more effective model.
Lesson 6	Structures, systems and mechanisms.	LO: Evaluate final product.	Children will look at each other's final engines and provide feedback. They will identify successful features. Children will critique their own engines, saying what was successful and what changes they'd make.	I can evaluate each part of my fire engine. I can say what I like best about my fire engine. I can say what I would improve next time.	I can annotate my final design, explaining the choices that I made.
Endpoints:	**<u>Knowledge:</u>** Know about the features of a fire engine. Know about different ways to create chassis.				

	Know how to use tools safely and appropriately. Know how to join materials in different ways. **Skills:** Measure and cut with some accuracy. Assemble, join and combine materials. Use finishing techniques to improve appearance of final product. Identify strengths and weaknesses of own work. I can use a junior hacksaw and wood glue to create a structure. I can use triangles to strengthen structures.
	Understanding: Understand Understand