

Medium Term Plan: Supporting Implementation of LTP/Progression Grid

Subject: DT- Mechanisms (Wheels and axles) Year: B Phase 1 Unit 1 of 4
NC/PoS:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria
- Generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes.
- Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.
- Select from and use a wide range of materials and components, including construction materials, according to their characteristics
- Explore and evaluate a range of existing products
- Evaluate their ideas and products against design criteria
- Explore and use mechanisms [for example levers, sliders, wheels and axles], in their products.

Prior Learning (what pupils already know and can do)

- Know how to use paper and card.
- Know how to do simple cutting, shaping and joining skills using scissors, glue, paper fasteners and masking tape.
- Know that tools can be used for a purpose.
- Know how to manipulate materials to achieve a planned effect.
- Know how to construct with a purpose in mind, using a variety of resources.
- Know how to use simple tools and techniques competently and appropriately.
- Know how to select appropriate resources and adapt work where necessary.
- Know how to select tools and techniques needed to shape, assemble and join materials they are using.

End points (what pupils MUST know and remember)

- Know how to design a product with wheels and axles and can explain the user and purpose. For example: a car for a small teddy, an ice cream van etc
- Know how to draw an annotated sketch of their wheels and axles product and can label it with materials and key parts (wheel, axle, chassis)
- Know how to select from PVA glue, glue sticks and scissors to cut and join materials (card and paper).
- Know how to name a variety of real-life items that use wheels and axles such as cars, vans, lorries, bicycles, Ferris wheels, electric fans etc and can explain is the axle is fixed or moving.
- Know the difference between fixed and moving axles.
- Know if their vehicle is suitable for the intended user and purpose. They can offer a way to improve their vehicle with some guidance.

Key Vocabulary

Wheel, axle, mechanism, chassis, fixed axle, moving axle, evaluate

Session 1:

Evaluating existing products

- Explore and evaluate a collection of toy cars and everyday products that have wheels and axles. Explore how they move and the impact of the mechanism. Which direction does it move in? Do they all move in the same way?
- Discuss the difference between fixed and moving axles, can they identify which of the items have fixed or moving axles? How does this impact the movement?

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<ul style="list-style-type: none">- Share job opportunities – engineer, designer <p>Vocab: wheel, axle, mechanism, chassis, fixed axle, moving axle</p>
<p>Session 2:</p> <p>Practising skills</p> <ul style="list-style-type: none">- Make a fixed and a moving axle prototype using paper (discuss that card would be more suitable as it is stronger and stiffer and will be used for the final product). Discuss the difference between the two mechanisms, consider how they move in different ways.- Explore: Why might we use a fixed axle and not a moving axle? Or a moving and not a fixed? How do they impact the movement and range of movement?- Evaluate effectiveness of prototypes and assess any changes that need making when it comes to making their final product. <p>Vocab: fixed and moving axle, mechanism</p>
<p>Session 3:</p> <p>Designing</p> <ul style="list-style-type: none">- Create a design criterion that considers the user, purpose and appeal.- Generate ideas based on simple design criteria and their own experiences, explaining what they could make: a vehicle (a car, lorry, ice cream truck etc)- Develop, model and communicate their ideas through talking and annotated sketches.- Create designs that suit the intended user and purpose by using drawings.- Design: How do we design a vehicle with wheels and axles? <p>Vocab: wheels, axles</p>
<p>Session 4:</p> <p>Making</p> <ul style="list-style-type: none">- Make final product, a vehicle with wheels and axles using card, paper, glue and scissors.- Plan by suggesting what to do next.- Select and use tools, skills and techniques, explaining their choices.- Use simple finishing techniques suitable for the vehicle they are creating e.g. the use of colours to make it more appealing, using their cutting skills to create accurate representation of features included e.g. windows, doors, seats etc.- Resilience – during the entire making process, discuss keeping on trying and never giving up even if the task gets tricky. <p>Vocab: wheels, axles</p>
<p>Session 5:</p> <p>Evaluating</p> <ul style="list-style-type: none">- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.- Consider if it is appealing.- Evaluate: Do the wheels work effectively?- Honesty – during the evaluation stages we discuss being honest with ourselves (self-reflection) and others to ensure we can improve ourselves and our work <p>Vocab: evaluate</p>
<p>Future learning this content supports:</p> <p>KS1 Year B – Textiles templates and joining techniques</p> <p>LKS2 Year B – Levers and linkages</p>

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LSK2 Year B – Pneumatics
UKS2 Year A – Pulleys and gears
UKS2 Year B - CAMs