



Edgewood Primary School - Year 1 and 2

Design and Technology – Knowledge Organiser

Structures and Mechanisms Unit: Vehicles (wheels and axels)



Prior Knowledge

Explored moving vehicles through play.

Begin to talk about how to change their models to make them stronger.

Begin to describe how to make their structures sturdier.

Gained some experience of designing, making and evaluating products for a specified user and purpose.

Developed some cutting, joining and finishing skills.

Key Knowledge for this Unit

Design

Below are some of the main considerations of a design process for a vehicle.

Chassis

The chassis is the frame or base on which the vehicle is built. A chassis should be strong and rigid enough to hold the vehicle. The chassis should include axle holders. Children should use their knowledge of strong structures to ensure their chassis is strong enough to support the wheels and axels.

Axle

Consider what you will make your axle from. It needs to be strong enough to hold the wheels, and fit freely in the axle holder.

Wheel

Consider whether your wheels will be fixed to the axle, or free. If fixed, they need to be firmly attached. If not, they need a stopper to prevent them from falling off.

Make

Wheels could be made from wood, card, MDF or plastic.

Axels could be made from dowels or paper sticks.

Free Axles - Fixed Wheels

The axels move with the wheels. Loose-fitting axle holder, tightly fixed wheels.

Fixed Axles - Free Wheels

The axels will remain fixed to the chassis. The wheels move alone. Tight-fitting axle-holder, loose fitting wheels.

Health and Safety

If you need to move around with scissors, hold around the closed blades, facing down.

Keep your work area and floor area clear – keep your belongings organised.

Walk safely and calmly around the classroom.

Evaluate

How well does your mechanism work?

Does it move smoothly?

Does it meet its purpose?

Who would use your mechanism?

What would they like about it?

How did you prevent any unwanted friction?

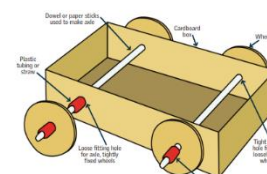
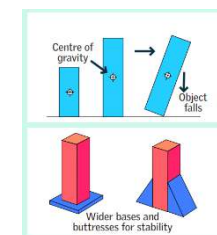
How did this affect the mechanism?

What else could you do to improve your mechanism?

Key Vocabulary

vehicle, wheel, axle, axle holder, chassis, body, cab, fixed, free, moving, mechanism

structure, wall, tower, weak, strong, base, surface, edge, triangle



Examples



Pop Quiz Questions

- What mechanisms have we learnt already?
- How does a slider/lever work?
- What can I do to make a structure stronger?
- What is the strongest shape?
- How can I join materials to make a structure stronger?