

Elton Primary School- Knowledge Organiser

DT Topic: Machines - Design functional machines **Year:** Year 2 Spring 1

Key Knowledge

Wheels and Axles

Mechanisms are the parts that make something work.

- -Mechanisms are all around us! Most objects that help us in our lives are made up of different mechanisms.
- -Wheels and Axles are mechanisms that help things to move.
- -Wheels are circular objects that roll on the ground, helping vehicles and other objects to easily move.
- -Axles are rods that help wheels to rotate. The wheel can either rotate freely on the axle, or be attached to (and turn with) the axle.

Vocabulary

| Word | Definition |
|-------------|---|
| mechanism | a system of parts working together |
| wheel | a circular object that revolves |
| axle | a rod passing through the centre of a wheel |
| axle holder | holds the axle allowing it to rotate |
| friction | a force which slows objects down |
| dowel | a peg used to hold parts together |
| chassis | the base of a wheeled vehicle |
| properties | the characteristics of a material |
| suitability | how suitable something is for a task |



Example Mechanisms

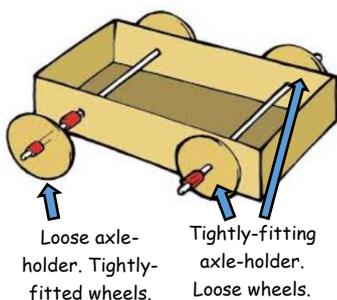
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|---|----------------------|---|
|  | <p>Ferris Wheel</p> | <p>-A <u>Ferris Wheel</u> is one example of a wheel and axle mechanism in action. Normally, Ferris Wheels are <u>fixed to the axle</u>. Force is applied to the axle which makes it spin. This makes the giant wheel spin too!</p> |
|  | <p>Roller Skates</p> | <p>-<u>Roller skates</u> are another example of wheel and axle mechanisms. Obviously, there are four wheels here instead of one, and the wheels are much smaller. Often, the <u>wheels rotate free from the axle</u>, but sometimes they are fixed.</p> |
|  | <p>Toy Car</p> | <p><u>Toy cars</u> (and real cars) use wheel and axle mechanisms to move. On toy cars, the <u>wheel is normally fixed to the axle</u>, meaning both the wheel and axle spin. This makes it really important that there is not too much <u>friction</u> on the axle, or the wheel will not move!</p> |

Making & Evaluating

Making

-Wheels could be made from wood, card, MDF, plastic, cotton reels, or foam-covered reels.

-Axles could be made from dowels or paper sticks.



Free Axles - Fixed Wheels
 -The axles move with the wheels.
 Loose-fitting axle-holder, tightly fixed wheels.

Fixed Axles - Free Wheels

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

Evaluating

- 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?

