

Springdale First School



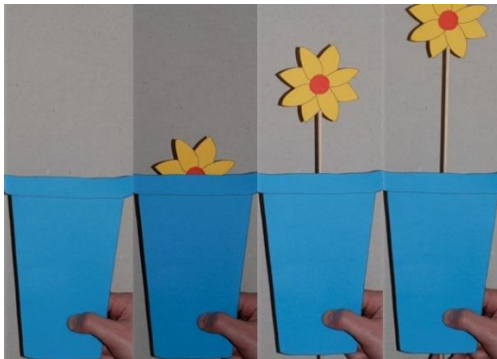
Imagine, Believe, Achieve

Year 2 Design and Technology Mechanisms



Children's prior learning in this area

- Sliders – select and use tools to cut and shape.
- Levers – explaining choices of tools and techniques used to cut, shape and join.
- Evaluate products against design criteria.
- Using toys with wheels and axles.
- Joining techniques – glue/tape/flange.



Cultural Capital Opportunities

Use of carts – how that impacted car manufacturing.
Investigate being a car manufacturer.







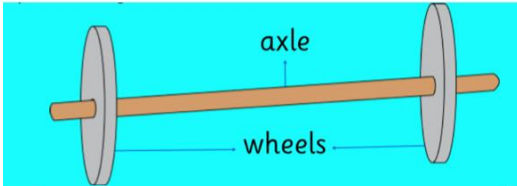
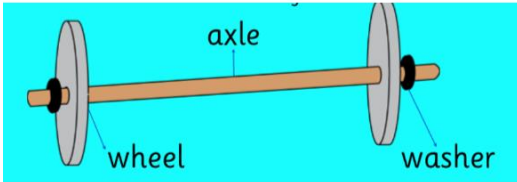
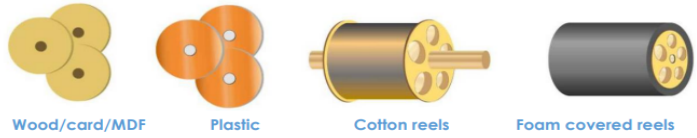

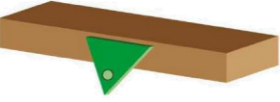

Toys – Look back at different toys that have wheels and axles.







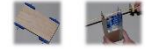
Key vocabulary and glossary

- **Wheel** – round disc attached to an axle to support movement of vehicles.
- **Axle** - a rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle.
- **Axle holder** – the component through which an axle fits and rotates.
- **Chassis** – the frame or base on which a vehicle is built.
- **Dowel** – wooden rods used for making axles to hold wheels.
- **Mechanism** - a system of parts working together in a machine.

***Friction** – resistance which is encountered when two things rub together.

Enquiry Question – What did the wheel do for us?	Enquiry Question- How does a wheel work?	Enquiry Question – What components are needed to make a moving vehicle?
<p>Concept - Enquire</p> 	<p>Concept – Design.</p> 	<p>Concept - Design</p> 
<p>Children will know the importance of wheels and the impact inventing them has on our lives today.</p> <p>The first wheel was thought to be invented around 3,500 BC and was a pottery wheel.</p> <p>The first wheeled vehicle was a bullock cart, followed by war chariots and four-wheeled carts of the gods. The spoke wheel was invented in around 2000 BC, which considerably reduced the weight of the wheel.</p> <p>Look at the ways wheels are used today and compare with when they were first used – Could we live without them?</p> <p>Practise – research different wheels on different sources.</p> <p>Apply – Mind map wheels and how they have evolved over time.</p> <p>Deepen – Explain how the wheel has impacted our lives today.</p> <p>The History and Evolution of the Wheel IE (interestingengineering.com)</p> 	<p>Children will know that - Wheel and axle consists of a round disk, known as a wheel, with a rod through the centre of it, known as the axle.</p> <p>R&R – What did the wheel do for us?</p> <p>Children to investigate how a wheel works through first hand experience – look at bikes, toy cars, carts, wheelbarrows...</p>   <p>Practice & apply - Through investigation of different components (a variety of axles, wheels, tape, blue tac, split pins, tacs) ask chn to create a moving mechanism - ‘working wheel’ with the equipment on their tables.</p> <p>Evaluate findings as a class.</p> <p>*Discuss the word ‘friction’ with the class – what does it mean? Can you explain when friction might occur?</p>	<p>Children will know the components that are needed to make a moving vehicle.</p> <p>R&R – What is a wheel and axle?</p> <p>Look at the components needed to make a moving vehicle.</p> <p>Investigate different types of wheels and ways to hold an axle.</p> <p>Types of wheels</p>  <p>Ways to hold moving axles</p> <p>Use pairs of clothes pegs glued with PVA to the underside of a box. Check the peg holes are large enough to allow axles to move freely. Make sure they are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.</p>  <p>Use card triangles with holes for the axle. Check the holes are large enough to allow the axle to move freely. Make sure opposite triangles are aligned carefully so the vehicle moves in a straight line when the wheel and axle mechanism is added.</p>  <p>Use large paper/plastic straws fixed with masking tape to the underside of a box. Check straws are positioned carefully so the vehicle will move in a straight line when the wheel and axle mechanisms are added. Make sure the straw hole is large enough to allow the axle to move freely. The wheels must be fixed tightly to the axle.</p>  <p>Tasks:</p> <p>Practise – model deconstructing a moving vehicle – name and label the parts.</p> <p>Apply – chn to label parts of a moving vehicle. (wheels, axles, washers, axle holder, chassis)</p>

		<p>Look at the different types of wheels and ways to hold them moving axles</p> <p>Apply – chn to become experts on different ways to hold axles and different wheels and report back to the class.</p> <p>Deepen – What axle and wheel would you choose and why.</p>
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Enquiry Question – What will my product look like?	Make working mechanism.	Enquiry Question – Was your product fit for purpose?
<p>Concept – design</p> 	<p>Concept – Make</p> 	<p>Concept - Evaluate</p> 
<p>Children will know how to design a moving vehicle using the correct compements.</p> <p>R&R – What joining techniques could you use to make your moving vehicle? Flange, butress, tape, glue...</p>  <p>Let's Get Practical!</p> <p>Working with wheels and axles</p>  <p>Talk about purpose of moving vehicle – who will it be for? What will it do? Refer</p> <p>Practice - Decide on a design criteria as a class – use flip or chn can record in books – they will need to refernce this.</p> <p>Apply – Chn to design own moving vehicle labelling components. Include materials and joining techniques used.</p> <p>Deepen – Chn caption/explain use for each component.</p>	<p>Children will know how to follow a design criteria to make their product.</p> <p>Give chn time to look at their design and gather the correct materials/tools/joining materials ready to make their car.</p> <p>Apply - Following their design, chn to make their product. Discuss and bubble up when questioning the chn about the techniques used and why.</p> <p>Deepen – annotate design if or when changes are made.</p>	<p>Children will follow a design crieteria to evaluate their product.</p> <p>Give chn to opportunity to test product without carrying a load.</p> <p>Practise - Next, chn to test mechanism with load.</p> <p>Apply - Evaluate product using design criteria.</p> <p>Deepen - Explain what went well and what they might change next time and why.</p>

THOUGHT

ACTION

