

Curriculum Intent:

To use creativity and imagination to design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values and to be able to evaluate past and present design technology, its uses and effectiveness.

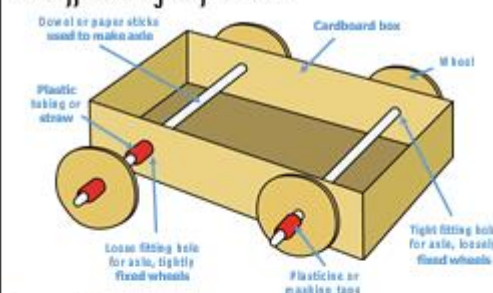

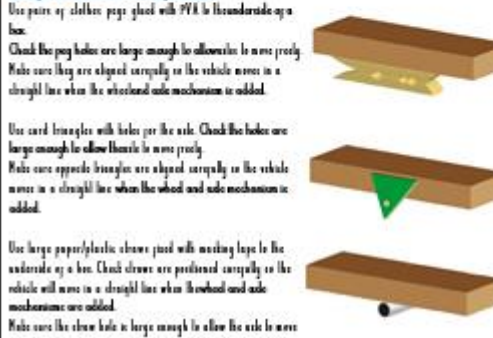


Subject	Term	Unit
DT	Autumn	Mechanisms: Wheels and axles
Prior knowledge Building on knowledge and skills		National Curriculum Focus
<ul style="list-style-type: none">• Assembled vehicles with moving wheels using construction kits.• Explored moving vehicles through play.• Gained some experience of designing, making and evaluating products for a specified user and purpose.• Developed some cutting, joining and finishing skills with card.		<ul style="list-style-type: none">• Design purposeful, functional, appealing products for themselves and other users based on design criteria• Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups• Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing)• Select from and use a wide range of materials and components• 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.

What?	Designing, making and evaluating a moving toy vehicle.
Why?	To begin to understand how mechanisms can work to create movement.
Key vocabulary	

axle	A rod on which one or more wheels can rotate, either freely or be fixed to and turn with the axle.	dowel	Wooden rods used for making axles to hold wheels.
axle holder	The component through which an axle fits and rotates.	friction	Resistance which is encountered when two things rub together.
chassis	The frame or base on which a vehicle is built.	vehicle	A thing used for transporting people or goods.

Key learning: (Specific link to the NC here)

Objective	Learning	
To explore and evaluate a range of existing products	<ul style="list-style-type: none"> Explore and evaluate a range of wheeled products such as toys and everyday objects. Through questioning, direct children's observations e.g. the number, size, position and methods of fixing wheels and axles. <i>How do you think the wheels move? How do you think the wheels are fixed on? Why do you think the product has this number of wheels? Why do you think the wheels are round?</i> Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders. Walk around the school building and grounds, recording how wheels and axles are used in daily life. 	<p>Two different ways to fix wheels</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 the axle to move freely. Make sure they are aligned correctly so the vehicle moves in a straight line when the wheeled 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 correctly 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 correctly 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> 

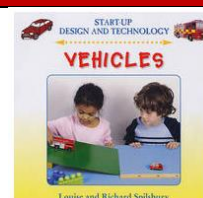
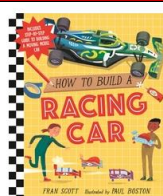
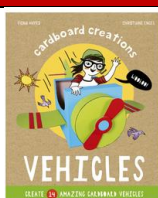
	<ul style="list-style-type: none"> • Read a story or non-fiction book that includes a wheeled product. Use this to introduce relevant vocabulary and to emphasise user and purpose. 	
To explore mechanisms and materials	<ul style="list-style-type: none"> • Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles. • Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders. • Ensure that children are taught how to mark out, hold, cut and join materials and components correctly. • Using samples of materials and components they will use when designing and making, ask the children to assemble some examples of wheel, axle, axle holder combinations. • Distinguish between fixed and freely moving axles 	
To design purposeful, functional, appealing products for themselves and other users	<ul style="list-style-type: none"> • Generate initial ideas and simple design criteria through talking and using own experiences. • Develop and communicate ideas through drawings and mock-ups. 	

based on a design criteria		
To select from and use a range of tools, equipment, materials and components to make a product	<ul style="list-style-type: none"> • Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing. • Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics. • Make their wheel and axle product using their design ideas and criteria as an ongoing guide. 	
To evaluate their ideas and products against a design criteria	<ul style="list-style-type: none"> • Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made. 	

Websites

- [Working with wheels and axles](#) (9-11 years but contains useful information)
- [EYFS Resources](#)
- [Let's Look at Vehicles](#) PowerPoints with a range of wheels with discussion prompts and 'design a vehicle for an alien' activity and lesson planning.
- [Toys](#) Activities and goals for teaching about toys, including building a toy collection and practical skills.
- [D&T Primary issue](#) 34 Innovations in wheel design. Years 4-6.
- <https://education.theiet.org/primary/teaching-resources/build-a-car-that-moves-inventors/>

Recommended Reads



Experience Day (Trip / visitor)

