

Willerby Carr Lane Primary School – Design and Technology

Topic:

Year: 2

Strand: Mechanisms

What should I already know?

- How to join and combine materials
- How to cut and shape card (and other reclaimed materials)
- How to make hinges
- How to use a construction kit to make strong and stable structures.

What will I know / be able to do by the end of the unit?

How do wheeled vehicles move?	<ul style="list-style-type: none"> • An axle is connected to a wheel by passing through its center. • The wheel and axle are attached to the chassis. • Either the wheel or axle must be free to rotate for the vehicle to move.
What is a winding mechanism?	<ul style="list-style-type: none"> • One end of a string is attached to a moving vehicle and the other to a cylinder. • The cylinder can then be turned forwards or backwards, wrapping the string around itself to pull the vehicle closer.
How do I evaluate my model?	<ul style="list-style-type: none"> • My vehicle is strong and stable. • My wheel and axle are joined securely. • My wheel or axle (either one but not both) can rotate. • My winding mechanism is strong and can alter the distance between myself and my vehicle.

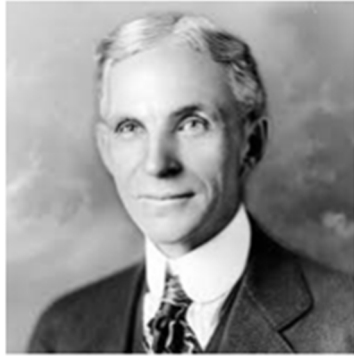
Vocabulary

Design	
axle	a rod passing through the centre of a wheel
chassis	the base frame of a wheeled vehicle.
design	a plan which shows the look and function of an object before it is made
dowel	a peg used for holding together parts of a structure.
vehicle	a thing used for transporting people or goods
winding mechanism	string connected to a cylinder used to move a vehicle closer.
Make	
connecting	joining or linking things together
combining	join or merge to form a single unit.
testing	check the quality, performance, or reliability of (something)
Knowledge and Understanding	
component	a part of a whole vehicle
distance	the length of the space between two points.
predict	estimate that (a specified thing) will happen in the future.
purpose	the reason for which something is created.
survey	look closely at or examine
table	a set of facts shown in columns.
Venn diagram	a way to represent information as circles, common elements placed inside intersecting circles.



Famous Inventors

Henry Ford (1863-1947) was a businessman and the *founder* of the Ford car company. He developed and manufactured the first *affordable* American car.



Orville and Wilbur Wright ('The Wright Brothers' – late 1800s- early 1900s) were two American aviation pioneers who are credited with inventing, building and flying the world's first successful plane.



Key Design Decisions & Skills

- Examine vehicles (lorries, prams, cars vans, ambulances etc.), discuss the different features (wheel, axle, chassis, body) and how these features support its purpose.
- Practise joining wheels and axles to allow movement. These can be assembled in 2 different ways: the wheel is attached tightly to the axle and the axle is free to rotate; the axle is fixed with the wheel free to rotate around it.
- Examine existing winding mechanisms on toys or premade constructions. Consider which winding mechanism is most suitable for our plane.
- Practise creating a winding mechanism using string and a cylindrical winder.
- Design a moving vehicle (gypsy moth plane) for Amy Johnson. Consider: its function; size; wheels; finishing and extras. Set the design criteria and record.
- Collect their materials, joining components and tools. Provide opportunities to create labels and logos.
- Discuss the order in which to create the moving vehicle and evaluate against design criteria.
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Tools and Resources

- toy vehicles, models, pictures of vehicles
- various types of wheels, including wooden and plastic wheels, cotton reels and card discs
- straws, doweling and plastic tubing, reclaimed boxes, card, clothes pegs, single-hole punch or card punch, thin corrugated plastic sheet