

Year 2: Structures and Mechanisms

How can Farmer Boggis keep his chickens safe from Fantastic Mr. Fox?

Situation

Mr. Fox keeps stealing chickens from Farmer Boggis's farm and Farmer Boggis is obviously not happy about this.



Design Brief

Design, make and evaluate a chicken coop for 3 chickens to keep them safe from predators. The chicken coop must be on wheels so that it can be moved into the warmth of the barn at night.

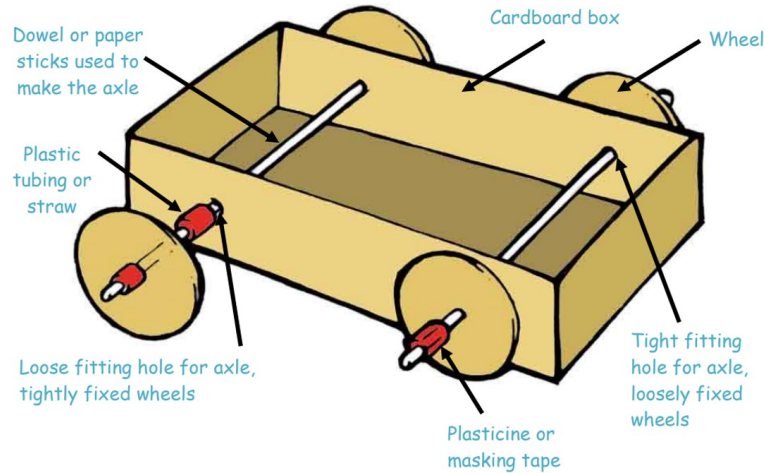
Design A Chicken Coop

You need to consider:

- appearance/aesthetics - *how will it look?*
- cost - *how much money will it cost?*
- customer - *who is it for?*
- environment - *can it be recycled?*
- size - *how big or small is it?*
- safety - *is it safe to be used by everyone?*
- function/purpose - *how does it work?*
- materials - *what materials will you use?*
- manufacture - *how will you make it?*

Wheels and Axles

Example of two different ways to fix wheels

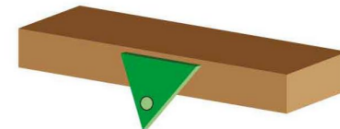


Ways to hold free moving axles

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.

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.

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.



Farmer Boggis is thrifty; reuse a box for the body of your coop.

User Profiles

User Profile

Nick the Noisy Cockerel



Name: Nick
Age: 7 years old
Likes: Getting up early, Crows at dawn each morning.
Key information: Thinks he's important as he is the only male in the farmyard. Likes to sleep higher than the chickens to show how important he is.

User Profile

Betty the Blue Chicken



Name: Betty
Age: 3 years old
Likes: Playing exercise and games. Is young and fun loving.
Key information: Is a bit scared of the dark and so likes sleeping close to other chickens. Is easy to spot and is therefore a target for predators.

User Profile

Elsie the Excellent Egg Chicken



Name: Elsie
Age: 10 years old
Likes: Eating plants and worms.
Key information: Is super proud of the large, colourful eggs that she lays. Is very kind, sociable and looks after the younger chickens in the farmyard. Keeps Betty company at night. Drinks a lot of water.

Evaluate

Does your prototype coop meet your design specification?



Vocabulary

assemble	To build or put together.
axle	A rod for rotating wheels.
axle holder	A part that an axle fits through.
chassis	A frame or base for a vehicle to be built upon.
combine	To mix or join together.
coop	A 'house' structure for chickens.
fixed	Unable to move - stuck.
free moving	Able to move easily.
friction	Resistance when rubbed together.
mechanism	A working part, like in a machine.

CRC Article 29: All children have the right to develop their skills and talents.

