

Automata Animal

Autumn 2
2021

Class Lynher

Exploring Animals

Name	Movement	Appearance	Habitat
Sea turtle	They use their flippers to burst the water.	A large shell to 2 flippers and a tail is a nail.	Oceanic seas.
Adelie penguin	Fast movement through the water.	Black with a white neck. Stomach/under.	Polar areas.
Bottlenose dolphin	up and down swift movement.	Grey colored with a fin and flippers.	Warm seas.
Giant panda	Slow and steady beside movement.	Black and white furry and fluffy and warm blooded.	Bamboo forests.
Orangutan	Swing heavily movement like a pr.	Orange furry with a dark face.	Rain forest.
Bengal tiger	Slow and steady before pacing and pouncing really.	Orange with black stripes and light color belly.	Savanna grassy areas.
Black rhino	Slow or fast depend on the situation.	A black gray color with a thick skin.	Africa.

Name	Movement	Appearance	Habitat
Sea turtle	glide in water shuffles on land. elegant.	Tough and hard shell.	Mainly live in the sea but some hatched on land.
Adelie penguin	waddle on land.	White and black feathers but can't fly and very soft.	Antarctic in the sea and land.
Bottlenose dolphin	flaps their tail and glides.	Smooth skin. white belly. grey body.	England in the water. Several different types.
Giant panda	Slow and fast.	black and white spots and lots of hair.	In jungles.
Orangutan	swing on trees quickly.	looks like human with ginger felt.	In the trees in Sumatra.
Bengal tiger	quick elegant and aggressive.	black stripes and orange fur.	Rainforest China.
Black rhino	fast, heavy and stomps.	Tough skin and huge horns.	Africa.

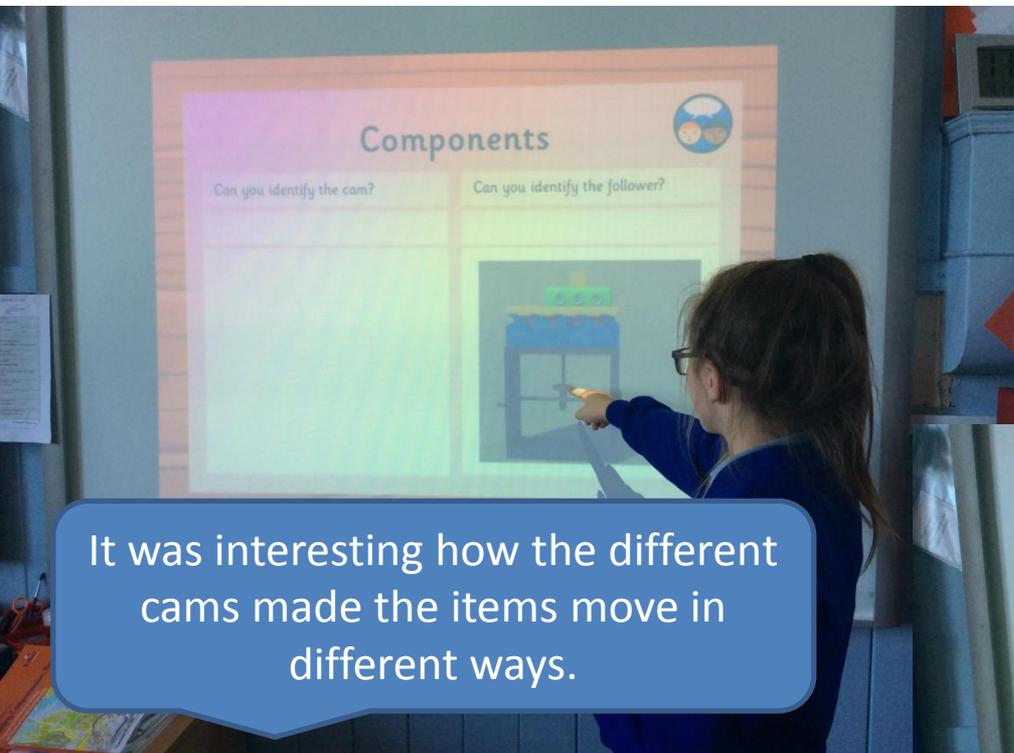
To begin our unit, we looked at how different animals moved in the wild.

Name	Movement	Appearance	Habitat
Sea turtle	They are usually out of the water as they spend most of their time in the water. They can swim very fast.	They have large shells, 4 flippers and a tail. They have a pattern of spots and stripes. They have a pattern of spots and stripes.	Most common but especially along and equatorial coasts. Most of the world's sea turtles are found in the tropics.
Adelie penguin	They swim well in the ocean and waddle when on land.	They have black feathers to keep them warm. Black.	East Antarctica.
Bottlenose dolphin	They are very fast swimmers up to 40 km/h.	Size 8-12g. They look like dolphins with a bottle nose.	Warm temperate oceans. Pacific, Atlantic and Indian oceans.
Giant panda	They sleep about 12 hours a day.	They have black and white fur. 275 pounds.	China forest.
Orangutan	climbing.	They look like apes. 200 pounds.	Rainforest canopy between Sumatra.
Bengal tiger	Their movement is graceful like a cat and are very quick.	Stripes thin and narrow and get larger. 170 pounds.	India, China and southern Asia.
Black rhino	Their movement is slow. They can also be very fast.	1000 pounds. 2 hours.	Eastern and southern Africa.

Name	Movement	Appearance	Habitat
Sea turtle	They move by moving their fins in different directions.	They have patterns on their shell and they shine in dark.	They live in hot water and the pacific.
Adelie penguin	They waddle with their feet.	They have black faces and white tummy.	They live in groups in Antarctica.
Bottlenose dolphin	They move by the movement of their tail.	grey with a thick nose.	They live in hot waters and in groups.
Giant panda	They're paws lift up and they spring.	Black and white like a cat.	In tropical forests.
Orangutan	Orangutans legs spring and they leap from trees.	big faces and chestnut colour.	In Indonesia.
Bengal tiger	They move by leaping with their paws.	are striped and orange.	Indonesia.
Black rhino	move by moving their bodies and they are black.	they have to be black.	In Africa.

We had to use our computing searching skills to help us in DT.

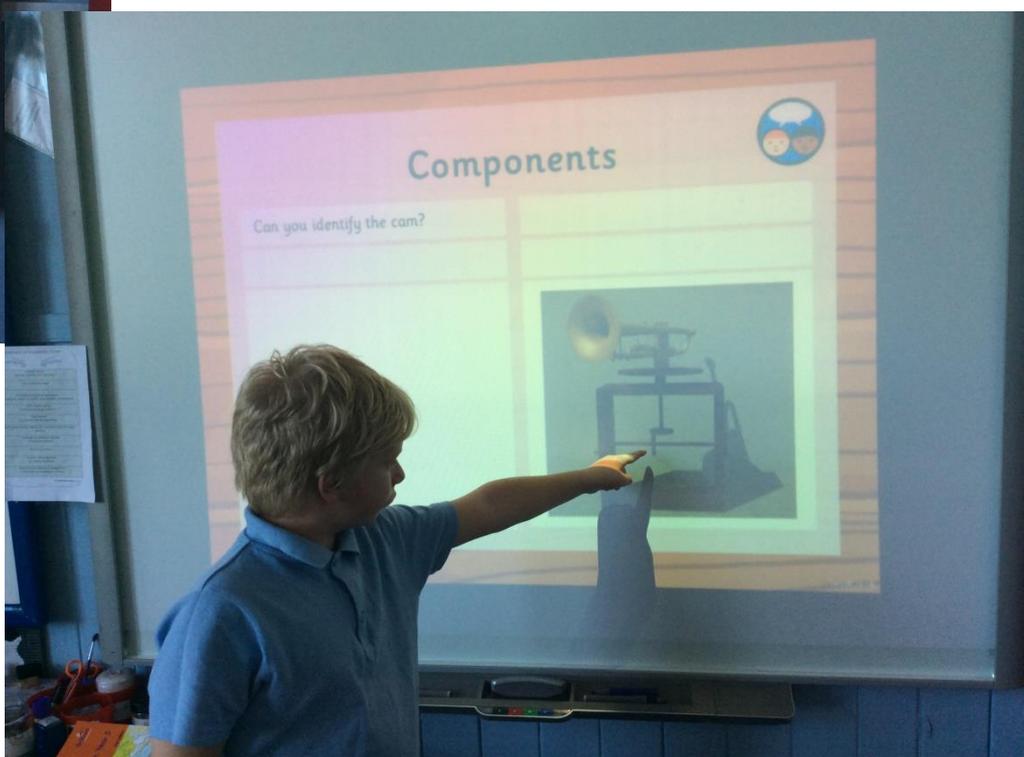
We looked at the mechanism of a cam and identified the different parts and what they do. We looked at examples of them being used in real life.



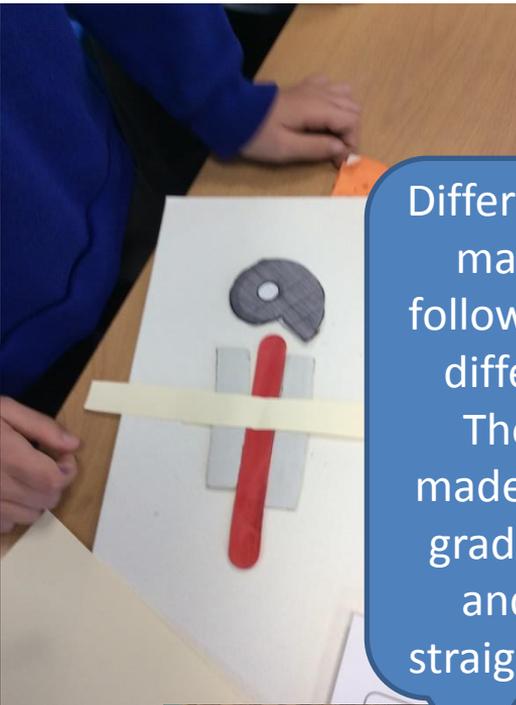
It was interesting how the different cams made the items move in different ways.

To move the object up and down the cam pushed a follower.

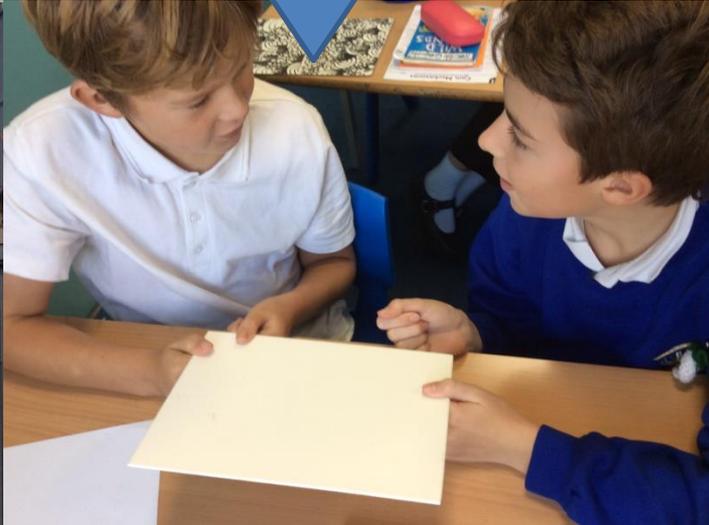
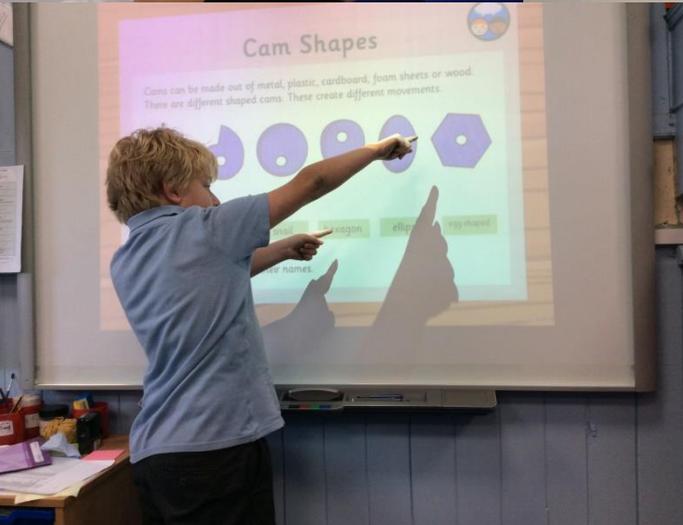
You turned the handle which turned the cam which moved the follower to move the object.



We made prototypes of different cams to see how they changed the movement of the follower. We then linked this back to the movements of the animals we looked at in our first lesson.



Different cams made the follower move differently. The snail made it move gradually up and then straight down.



Design Criteria

Aim- I can use research and develop design criteria to inform my design.

Questions to Spark Ideas	Design Criteria 1	Design Criteria 2
Who is the product intended for?	Must appeal to class Pym	
What appealing features will it have?	Must be colourful Must be recognisable	Must be shape of animal
What are its functions?	Must move using animal cam and follower	
How will the product relate to people's size, shape etc?	Max 20cm box	

First we developed our design criteria as a class, working out what we wanted from our product. Then we made our design ideas based on these. Finally we looked at those produced in our group and chose the one we thought best matched the criteria.

Design Criteria

Aim- I can use research and develop design criteria to inform my design.

CAFOUES	Questions to Spark Ideas	Design Criteria 1	Design Criteria 2
Quality	What design and manufacturing features will ensure a quality product?	Use appropriate material Add in test Make it strong	
Usability	How easy is the product to use? Will a user guide be needed?	Class Pym must be able to use it	
Environment	How will the product relate to the environment - recycling parts, materials used in manufacture, the manufacturing process?	Can be passed from class Recycle where possible	
Safety	How will you ensure that the product is safe?	Sand rough edges Triangles for strength No sharp edges	

mal ...
with a worm

What will move on my animal?
Whole body for the bird. And the whole body again.

cam/cams will I use to make it move?
the Snail for the bird, and the egg cam, and the worm and cam again.

What motion will this create?
the bird will go up and down
the worm comes up and jumps out of its skin and goes back down.

What will I need?
Spiral stick, frame, Triangles, Oval cams, wood, Wooden handle, colour

We had to think about what cams to use to make the movement we wanted.

My animal ...
Fishy

What will move on my animal?
The whole thing will move together as one

Which cam/cams will I use to make it move?
The egg shaped one

What motion will this create?
It will keep going up and down like it is diving and surfacing

Additional design features ...

What will I need?
2 - cams
base/box
handle

Sollower
worm - bird + animal



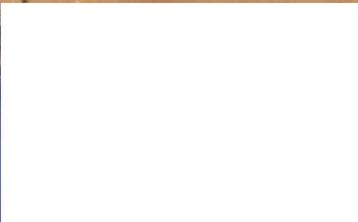
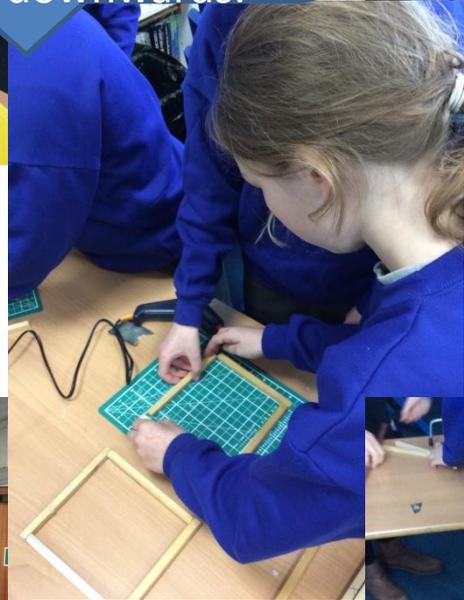
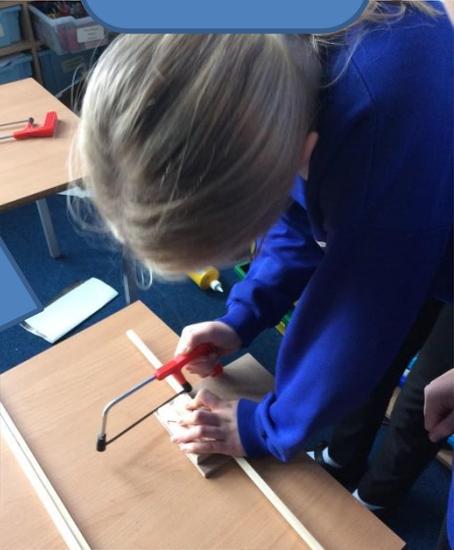
We had to use our tools carefully and safely.



You had to be careful with the hacksaws by keeping your fingers away from the blade and sawing carefully downwards.



We had to measure the same length so you wouldn't get a part uneven.



We used our maths skills to measure accurately.



On the gluing you had to be careful and make sure you had a space to glue and did it over the mat.





Our finished designs!

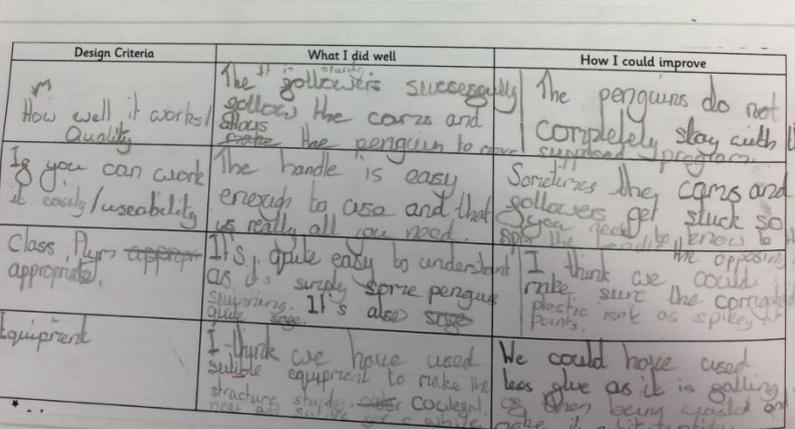
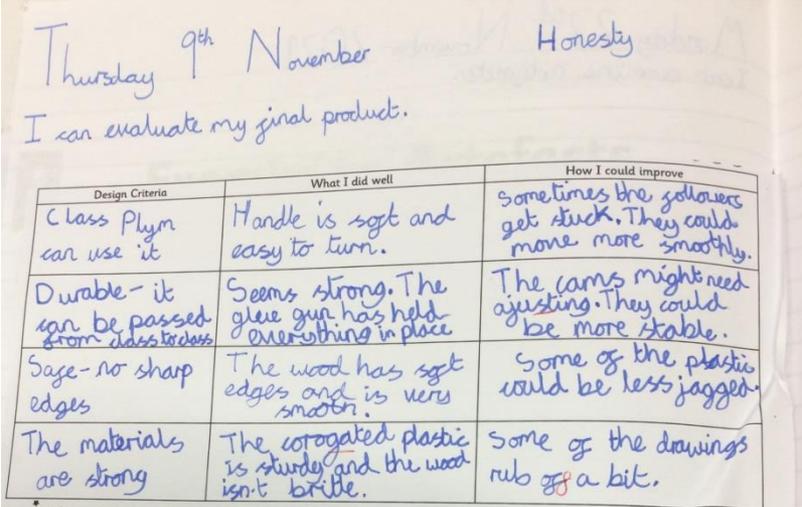
We were proud of them because they all moved.

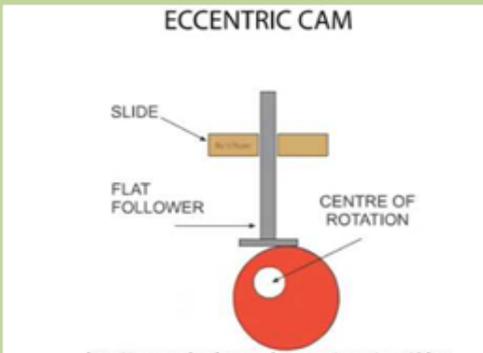
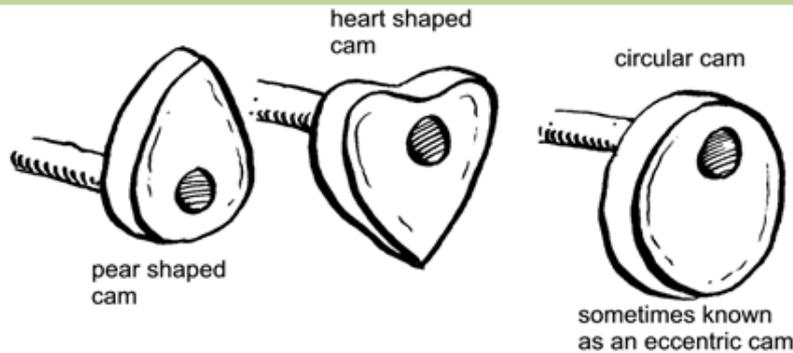


We evaluated our designs against our design criteria. We used our honesty to say what we had done well and what we can improve.



We didn't always get the right movement and had to work out how to stabilise them.





What we have learnt before:

I know what different materials are good for

I can use a range of tools

Forever facts

Cams produce different movements depending on their shape

I know that triangles on corners can help to strengthen something

Different materials and tools are suited for different jobs. E.g. stiffer cardboard is used to keep a shape

Skills

I can measure, mark out and cut accurately

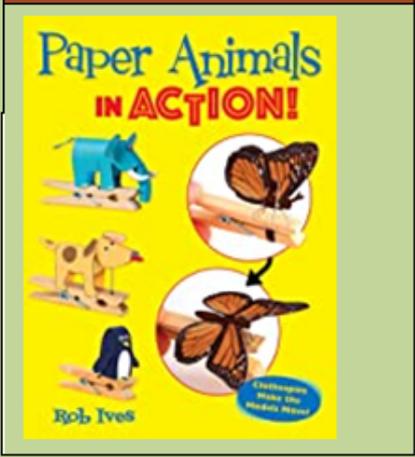
I can draw on different sources of information for the design

I can carefully finish a product

I can work safely

I can use a wide range of tools

Exciting Books



Our Endpoint

I can make an automata animal

Subject Specific Vocabulary

cam	a rotating disk shaped to convert rotary into linear motion
mechanism	a system of parts working together in a machine
guide	a structure that directs the motion of something
follower	the component which follows the movement of the cam
component	a part of a machine
design criteria	the precise goals that a project must achieve in order to be successful
functional	having a purpose or task
aesthetic	the appearance of something

Cultural Capital

Jobs for the future could be: engineer, mechanic, problem solver.