

# A TO Z OF ENGINEERING

## WORKSHOP 2: Zoos

Welcome to Engineer Academy where we're exploring an A to Z of Engineering – everything from acoustics to zoos!

So what does engineering actually mean? Well, anything that is built – whether a bridge, building, washing machine and even your smartphone, must first be engineered.

An engineer is a person who designs and builds complex products, machines, systems or structures. They want to know how and why things work, and have scientific training that they use to make practical things. Engineers often specialise in a specific branch of engineering, such as civil, electrical, mechanical and chemical engineering. You can think of engineers as problem solvers – so if you like solving puzzles you might make a great engineer!

Some of the different types of engineers you will come across are...

**Electrical engineers** design, build and maintain electrical systems, machinery and equipment. They could be working in a factory, at a power station, in a workshop, at a research facility or an office.

**Mechanical engineers** research and design mechanical products and systems, and oversee them being made, used and repaired. They could be working in an office or factory, or be out and about on site visits.



Royal Academy  
of Engineering

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Find out more at [www.funkidslive.com/engineer](http://www.funkidslive.com/engineer)

# Engineering through the Ages ✨

From the invention of the wheel to the newest Apple computer and from the Clifton Suspension Bridge to the Pyramids of Giza, engineering has been a part of human history, in one form or another, for thousands of years!

Today's engineers use the most advanced technologies, alongside established scientific principles, to apply cutting-edge solutions and innovation to real world challenges.

**So – what's engineering got to do with Zoos? Engineering isn't just about buildings and circuits – it's behind some of our favourite places to go too, so let's find out what engineering has to do with zoology!**

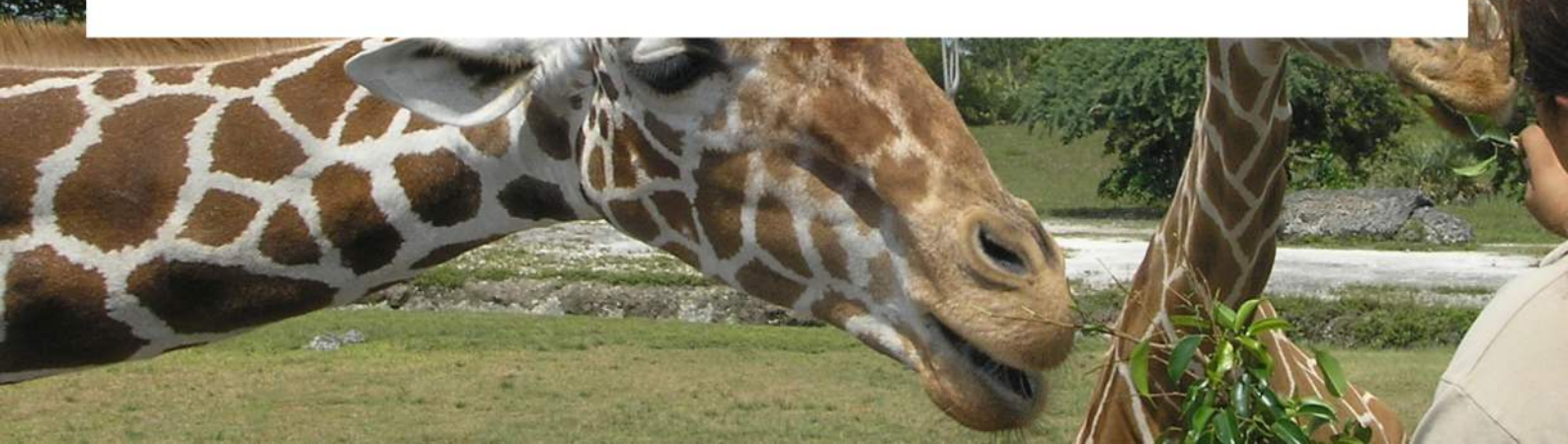
## Z is for Zoos ✨

There are over 300 zoos across the UK. One of the biggest, Chester Zoo, has 1,571 mammals, 1,759 birds, 339 reptiles, 677 amphibians, 6,739 fish and thousands of insects!

Engineers help keep the animals' habitats just right to help keep them healthy. They are responsible for building and maintaining habitats for all the animals – from Aviaries to Zebras!

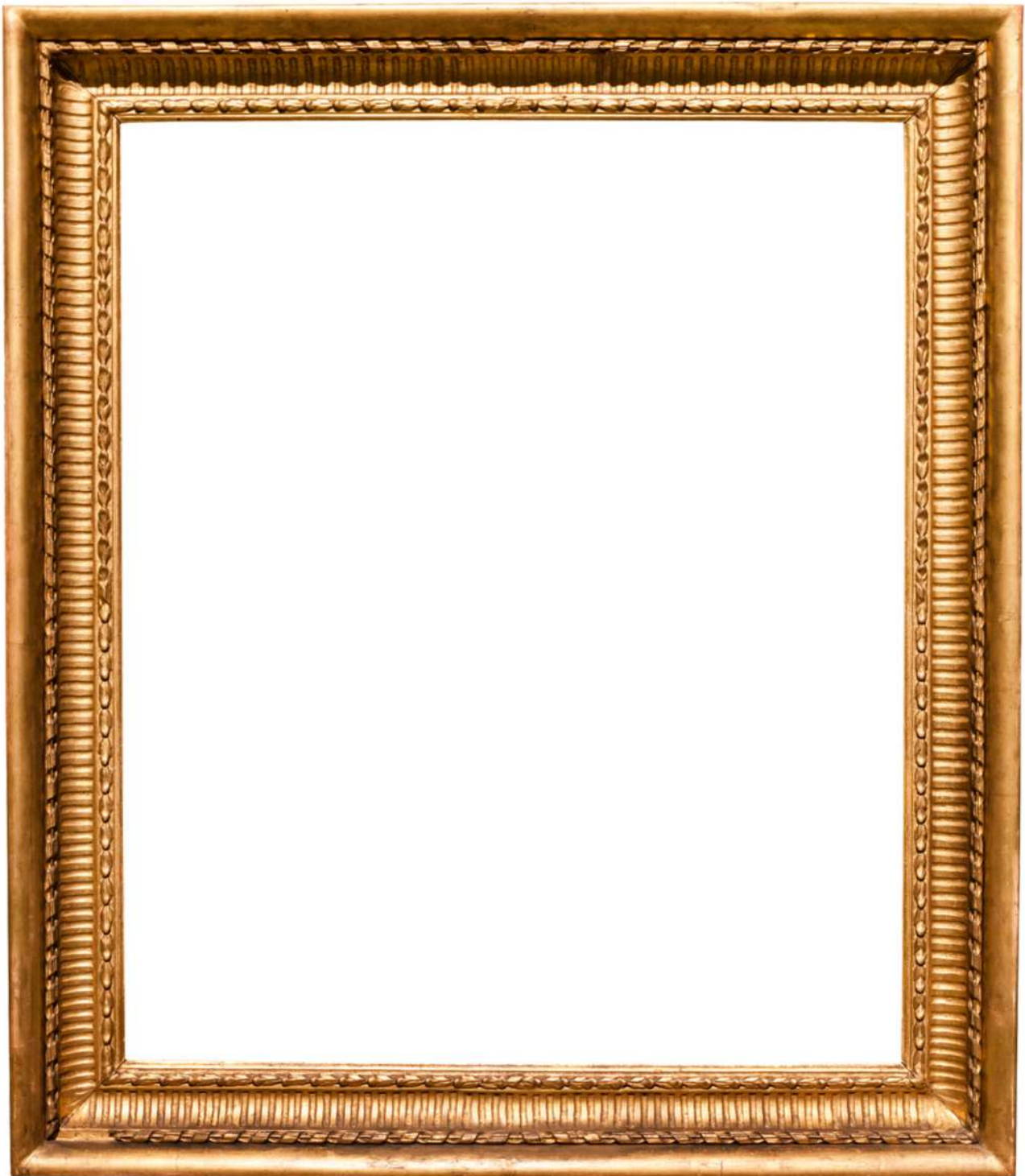
Engineers who work for zoos are called life support engineers and are trained in architectural, civil, chemical, biomedical, environmental and mechanical engineering. It's not just about the animals – Engineers have to think about the safety of the keepers and visitors to the habitats and consider this when animals have to be moved.

Habitats will be designed to have the right temperature and humidity for the health of the animal and will include things that the habitat would have in the wild, such as places to climb or to help stimulate them.



# Academy Challenge

Imagine that you are an engineer creating a new habitat for your favourite animal at the zoo – use the space below to draw what it might look like! Remember to think about security, temperature, humidity, sources of food and stimulation – and most importantly safety – for animals, visitors and keepers. Let your imagination go wild!



# Wordsearch

V S A F E T Y W I L D L I F E O Z B  
E O X F A M B E H A V I O U R S S N  
Y A T Y Z H A B I T A T A U U H M B  
B N S T R A N S P O R T A T I O N O  
P X Y K T V I S I T O R S C U N Z I  
T W S T I M U L A T I O N J K U I D  
E M U E N C L O S U R E U I B T K H  
E N V I R O N M E N T K Y J B P C O  
T X J V V U T K D K S E C U R E V H  
X I T S U S T A I N A B L E A H O Y  
U N M K Q B B L A C K S M I T H H D  
W R J N C O N S E R V A T I O N Z Y

Can you find all of these words?

Habitat  
Enclosure  
Blacksmith  
Environment  
Sustainable  
Conservation

Secure  
Stimulation  
Wildlife  
Visitors  
Safety  
Transportation  
Behaviours

## Did you know that...

Chester Zoo, they have installed carbon fibre sway poles to encourage the Sumatran Orangutans to climb. They look like bamboo and sway in a way that that's similar to how they move in the natural habitat. They can even be moved around to keep things interesting.

It's not just important for engineers to keep the animals safely in their habitats – it's important to keep wild animals in the area out too as they may be at risk or cause harm to the animals.

Sustainability is at the heart of every zoo – they are protecting endangered species and supporting the protection of their habitats in the wild through initiatives. And look to use renewable sources to create the habitats and power the zoos.