

Design and technology - Design in the natural world

How can designers use 'biomimicry' and 'biomorphic' for inspiration?

Technology Lesson 1



**OAK**  
NATIONAL  
ACADEMY

# What we will explore in today's lesson....

*Task: Write down these definitions and keywords along the way*

**How nature can inspire designers**

**The meaning of biomimicry**

**The meaning of biomorphic**

**How you can use nature to inspire**



# In this lesson you will need

*If you prefer you  
can also work in  
word or  
PowerPoint.*

**Exercise book or paper**



**A pencil**



Credit: Flaticons © 2010-2020 Freepik Company S.L. All rights reserved



# So what does 'Biomimicry' mean?

*Task: Write down these definitions*

Let's break down the word

## Bio

Bio comes from the Greek word 'bios', which means 'organic life'.

## Mimic

Mimic means to take on the appearance of or to copy.

## Biomimicry

When the two are put together you get 'biomimicry'. For designers this means to copy or take some inspiration from nature.



# So what does 'Biomorphic' mean?

*Task: Write down these definitions*

Let's break down the word

## Bio

Bio comes from the Greek word 'bios', which means 'organic life'.

## Morphic

Morphic means to take the form of.

## Biomorphic

When the two are put together you get 'biomorphic'. For designers this means to copy or take the form from nature.



# Example 1

*Task: Explain the definition of Morphic. If you are not sure research this.*

**Can you see how the form of this kingfisher inspired the front of the train?**



Credit: Pixabay



# Example 2

*This is an example of morphic.*



**Can you see how the form of this beetle inspired the car? The car is also called a Beetle!**



Credit: Pixabay



# Example 3

*This is an example definition of mimic*

**This slide shows how plastic suction cups could have been inspired from an octopus**





# Example 4

*This is an example definition of mimic*

**The hard coating from a sea shell inspired the scratch resistant coating on car windshields.**



*Nature has been re-  
designed through evolution  
over millions of years. It's a  
great way to inspire you  
too!*



# Can we use biomimicry to help with these issues?

*Copy these ideas down*

## Grip

Sometimes additional grip and friction is needed

## Going fast

There are many situations where speed is important

## Cooling down

Moving parts can get hot, they need cooling down

## Structural strength

Strength without weight is sometimes crucial



# Grip

*This is an example of grip in nature*



**It is amazing how this gecko can grip to smooth surfaces and the lizard to rocks and trees..**



Credit: Pixabay



# Cooling down

*This is an example of cooling down in nature*



**How does a dog cool down? How can the colours on a zebra create a microclimate above their skin?**



# Going fast

*This is an example of going fast in nature*



**Fighter planes and sports cars have been inspired by these two amazing animals, but why?**



# Structural strength

*This is an example of structural strength in nature*



**Where have you seen these structures? How have they been used in the design of products?**



# Tasks

*You will need a computer for this task*

- 1. Watch the video on YouTube called Biomimicry 101 – Examples of how we copied Nature.**

**<https://www.youtube.com/watch?v=V2GvQXvjhLA>**

- 2. Produce a mood board to show the different solutions that nature uses. You will need to create your mood board in PowerPoint or Word. A mood board is a neat collection of images.**

