

# How did we get here?

Course last update: 2020 04 22 11:35

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## General

This section covers the evolution of the planet and the human species, looking at key issues that have impacted on our development, environmentally, socially, technologically and economically. It is quite a long section of curriculum but you can pick and choose the elements that interest you most.

## Resources and Activities

**assign: Test submission 2**

Link: [Test submission 2](#)

# Big History and our planet

## BIG HISTORY

### How did everything begin? What even *is* 'everything'?

Scientists believe time, space and the universe were created by an event called the **Big Bang**, which happened over 13 billion years ago - before that, there was 'nothing'!

Confused? Well, this *is* a bit confusing! **Big History** is the scientific exploration of how the Universe started and how matter and energy came into existence, forming the common story we all share on planet Earth.

There are a number of videos that try to explain this process, and we've selected just a few for you to choose from - or you can watch all three, if you want! Unless this area of science is one you are interested in studying further, you don't have to understand it fully. It is nevertheless important to have a general idea about how the Earth was formed, being the starting point in the journey of how we got here today.

The shortest overview is provided by National Geographic:

Playing time: 5:50

[watch](#)

This TED Talk is more like someone telling a story:

Playing time: 17:40

[watch](#)

This next video is the first of a series for those particularly interested in Big History and the Big Bang. If you find it interesting, you can watch the rest of the series on the OER Project YouTube channel.

Playing time: 13:55

[watch](#)

### The Big Bang (5 coins)

Wow! Did you understand that?

1. Write a two-to-three-sentence summary of the Big Bang to help the rest of us who don't quite understand it!
2. Post your summary on the '[Big Bang forum](#)' to help others.

## PLATE TECTONICS

Moving forward a few billion years from the Big Bang, planet Earth is formed. This next video gives a good overview of the Earth's formation and introduces us to the idea of plates covering the Earth's surface.

Playing time: 3:27

[watch](#)

These plates are not static - they move, albeit very slowly. This movement is what we feel when there is an earthquake. To understand the effects of the plates' movement, watch this next video. It introduces the different types of plates, how they move, and the impact of their movement.

Playing time: 4:12

[watch](#)

## Activities

There are lots of different activities that can be done on the topic of plate tectonics. You don't have to do them all now, but eventually you should aim to complete at least 20 coins' worth.

### [Mapping the plates \(5 coins\)](#)

1. Use [Google Images](#) to find a geographical map of the Earth and paste it into a new image. You can read about how to create or edit images [here](#).
2. Create a new layer and paste [this](#) map of tectonic plates over the top. Adjust the alpha channel so the map of the world can be seen underneath. This map is used courtesy of the [University of Wisconsin Green Bay](#).
3. Fill in the different types of plates with different colours.
4. On a new layer, use different colours to highlight the different types of margins.
5. Use a new layer to create a key that tells the reader what each colour represents.
6. Use a new layer to mark at least five famous natural landmarks with an 'X' and name them. You might include famous volcanoes and mountain ranges, for example.
7. Save the map and upload it to the '[Mapping the plates submission](#)'.
8. Comment in the '[Map forum](#)' about whether Australia is more or less safe from earthquakes and volcanoes compared to other parts of the world. Explain why, in at least two sentences, referring to the concept of plate tectonics.

### [Tidal waves and tsunamis \(5 coins\)](#)

1. Create a series of at least four diagrams that show the sequence of events that happens in order for a tsunami or tidal wave to occur. You can read about how to create or edit images [here](#).
2. Paste your images into a Word document to show the order the order of events.
3. Upload the Word document to the '[Tidal waves and tsunamis submission](#)'.
4. Write at least two sentences explaining what you would do if you were at the beach and you noticed the first events in the chain occurring. How would you survive? Post your answer in the '[Surviving a tsunami forum](#)'.

### [Waterworld \(10 coins\)](#)

Watch the 1995 film Waterworld, directed by Kevin Reynolds. You can watch the trailer here:

Playing time: 1:40

[watch](#)

Then answer the following questions on the '[Waterworld forum](#)'. You must reference the following concepts in your answers: flood, drought, plate tectonics.

1. What has happened to result in there being very little land left in the world?

2. Is this idea plausible? Why or why not?

### [Volcanoes \(15 coins\)](#)

1. Choose a famous volcano, anywhere in the world. Examples include Mount Vesuvius, Krakatoa, and Mount Etna.
2. Research the history of the volcano, its eruptions, and its dormant life.
3. Given the volcano's pattern of eruptions, consider roughly when you think it might erupt again.
4. Write a story about surviving the next eruption if you want to be futuristic, or a story about surviving a past eruption if you want to be historical. You can write your story as a regular piece of fiction, or as a game using Twine. You can read about how to write an interactive story [here](#), in the section on game development. You are also free to use images in your story.
5. Post your story in the '[Volcano story forum](#)' for others to give feedback on.
6. Read or play someone else's story and provide at least one sentence of feedback.

### [Tectonics video \(20 coins\)](#)

1. Make an educational video about how plate tectonics lead to one of the following: volcanoes, tsunamis, earthquakes. Your fellow students are the target audience, and the aim is to teach them about plate tectonics. The video should be between 5 and 8 minutes long.
2. Upload your video to YouTube (public, private, or unlisted) and then post the link to the '[Tectonics video forum](#)'.
3. Post at least one sentence of feedback on someone else's video.

## The atmosphere

The last section of the planet we need to consider is the atmosphere. This is the layer of gas that surrounds the Earth and allows us to breath, amongst other things.

These next videos explain how the atmosphere works. The first has a very annoying cartoon narrator, but it gives a clear description of the five layers of the atmosphere:

Playing time: 3:59

[watch](#)

This next video compares the atmosphere to a liquid form to give you an idea of how it behaves.

Playing time: 4:56

[watch](#)

Finally, let's consider what would happen if the atmosphere disappeared!

Playing time: 3:50

[watch](#)

### Atmosphere diagram (5 coins)

1. Draw a diagram with five concentric circles representing the five layers of the atmosphere.

2. Label the scale clearly and apply it to the different circles to represent the thickness of each layer.
3. Scan your diagram or take a photo of it, then upload it to the '[Atmosphere diagram submission](#)'.

## The weather

Our weather is one of the systems that exists within the atmosphere. It is caused by the flow of air and ocean currents, which in turn cause pressure changes in the atmosphere. The next video provides a basic introduction to the weather.

Playing time: 3:24

[watch](#)

In the second video on the atmosphere above, a tornado was compared to a whirlpool. How do extreme weather events like this form? The next video provides a good explanation of severe weather occurrences.

Playing time: 4:25

[watch](#)

If you're interested in extreme weather events, there are a number of videos on YouTube, many of which have a lot of swearing on the part of the people filming them! This one doesn't, though – it's a compilation of natural disaster footage to demonstrate the types of event that can occur. It's quite long, but it provides a vivid illustration of the power of nature.

Playing time: 23:11

[watch](#)

### Did you know?

For those really interested in the weather, here's a video of 25 facts you might not know about the atmosphere, including how thunder works.

Playing time: 11:01

[watch](#)

## Activities

Complete at least 20 coins' worth of activities below. [Greenhouse effect \(5 coins\)](#)

1. Create an infographic explaining the greenhouse effect in at least three steps.
2. Add at least three facts about the impact of the greenhouse effect on Australia.
3. Add your infographic to the '[Greenhouse Wiki](#)'.

### [Tornadoes and hurricanes \(5 coins\)](#)

1. Write a numbered, step-by-step explanation of how hurricanes or tornadoes start, build, and die out. Aim to write at least five sentences.
2. Save your explanation as a Word file and upload it to the '[Tornadoes and hurricanes submission](#)'.

### [Disaster movie review \(10 coins\)](#)

1. Select a film based on a natural weather disaster. If you need some ideas, watch this next video:

Playing time: 10:43 [watch](#)

2. Write a review of your chosen weather-based disaster movie, focusing on how realistic the movie is in representing the build-up to the disaster and its causes, as well as the impact of the disaster. Your review should be at least 250 words.
3. Post your review on the '[Disaster movie forum](#)' to share with others.

### [Weather report \(15 coins\)](#)

1. Record at least 30 seconds of outdoor footage in your area each day for three days, showing the changes in weather that occur.
2. Write down the following for each day: a) maximum and minimum temperature, b) how much it rained (if at all) in millimetres, and c) the UV index. You can find this information at the [Bureau of Meteorology](#).
3. Edit your video recordings together into a local three-day weather report, featuring a voice-over that explains the information from step two, and anything else you'd like to comment on.
4. Upload your video to YouTube then share it on the '[Weather report forum](#)'.
5. Watch someone else's video and post at least one sentence of feedback.

### [Lobby your MP \(20 coins\)](#)

1. Use Google to research a specific climate and environmental issue in your area, the state, or elsewhere in the country. Examples include: bushfires, climate change, water, renewable energy. The [Climate Council](#) provide useful reports on these issues. Gather at least three facts about the issue that you could include in a letter to a Member of Parliament (MP).
2. Search by postcode on the [Parliament of Australia website](#) to find the local MP for your issue of choice, or a MP who is or should be involved with the issue. When you have found their page, click on 'Connect' to find their email address.
3. Use Google to find information about your chosen MP's stance on the issue.
4. Work out what you would like your chosen MP to do about the issue. You could ask them to vote for or against a Bill, speak about the issue to Parliament, talk about the issue in the media to raise awareness, move a motion in Parliament, or raise the issue with the relevant Minister (you can find a list of Ministers [here](#)). You can read more about what you can ask from a MP on the [Oxfam website](#).
5. Write a draft email to your chosen MP, including the facts you researched and what you would like them to do. You can use [this](#) template from Oxfam. Because you are writing an email rather than a physical letter, you won't need to include the sections before 'Dear Sir/Madam'.
6. Show your letter to a teacher, friend, family member or someone else you know to get feedback.
7. Post your letter on the '[Lobby your MP forum](#)'.
8. Write at least one sentence of feedback in response to someone else's letter.
9. Once you're ready, send your letter to your chosen MP as an email. CC in your tutor, and be sure to use a professional-sounding email address.

## Resources and Activities

### forum: Big Bang forum

Write a two-to-three-sentence summary of the Big Bang to help the rest of us who don't quite understand it!

Link: [Big Bang forum](#)

### forum: Map forum



Discuss whether Australia is more or less safe from earthquakes and volcanoes compared to other parts of the world. Explain why, in at least two sentences, referring to the concept of plate tectonics.

Link: [Map forum](#)

### forum: Surviving a tsunami forum

Given the chain of events that lead to a tsunami occurring, what you would do if you were at the beach and you noticed the first events in the chain? How would you make sure you survived?

Link: [Surviving a tsunami forum](#)

### forum: Waterworld Forum

How plausible do you think the Waterworld scenario is, and why, given the patterns of floods, droughts and plate tectonics we are experiencing in the world today?

Link: [Waterworld Forum](#)

### forum: Tectonics video forum

Share the link to your tectonics video here.

Link: [Tectonics video forum](#)

### wiki: Greenhouse Wiki

Add your greenhouse effect infographic to the main page of the Wiki below.

Link: [Greenhouse Wiki](#)

### forum: Disaster Movie Forum

Write a review of a weather based disaster movie, focusing on how realistic the movie is in representing the build up to the disaster and the causes, and also the impact of the disaster.

Link: [Disaster Movie Forum](#)

### forum: Weather report forum

Share your weather report video.

Link: [Weather report forum](#)

### **forum: Volcano story forum**

Post your volcano stories here.

Link: [Volcano story forum](#)

### **forum: Lobby your MP forum**

Post your letter to an MP.

Link: [Lobby your MP forum](#)

### **assign: Tornadoes and hurricanes submission**

Link: [Tornadoes and hurricanes submission](#)

### **assign: Mapping the plates submission**

Link: [Mapping the plates submission](#)

### **assign: Tidal waves and tsunamis submission**

Link: [Tidal waves and tsunamis submission](#)

### **assign: Atmosphere diagram submission**

Link: [Atmosphere diagram submission](#)

# Evolution

## Evolution

### What is evolution?

Oxford Dictionaries define the word '**evolution**' as follows:

#### noun

1. the process by which different kinds of living organisms are thought to have developed and diversified from earlier forms during the history of the earth.
2. the gradual development of something, especially from a simple to a more complex form: "the forms of written languages undergo constant evolution".

**synonyms:** unfolding, recasting, humorous: transmogrification, rare: evolvement

### Word Origin

early 17<sup>th</sup> century: from Latin *evolutio*(n-) 'unrolling', from the verb *evolvere* (see *evolve*). Early senses related to movement, first recorded in describing a 'wheeling' maneuver in the realignment of troops or ships. Current senses stem from a notion of 'opening out', giving rise to the sense 'development'.

It's interesting that the origin of the word came from 'unrolling' - which has a reverse momentum to it - while the notion of evolution is progressive, with forward momentum as elements evolve. Evolution occurs over a period of time, and involves something changing from the start of the period of time to the end.

### Evolution (5 coins)

Consider the word 'evolution' and what it means to you. Can you identify things that evolve, aside from living beings? The mobile phone, for example, or the climate. Post two things that evolve aside from living beings on the '[Evolution research forum](#)'.

### Natural selection

Charles Darwin's theory of **natural selection** is generally accepted by the scientific community as the best explanation for how life evolved on Earth. In its simplest form, natural selection describes how traits that help an organism **survive** and **reproduce** are more likely to be passed on, making those traits more common in the population.

This next video provides a good historical overview of how the theory of evolution evolved.

Playing time: 13:09

[watch](#)

### The origins of life on Earth

But how did it all start? The next video takes us from the very beginning of life on Earth - the technical term for this is '**abiogenesis**'!

Playing time: 4:56

[watch](#)

### Autotrophs and heterotrophs (5 coins)

How did we get here?

v.1.0.0

The video above introduces the distinction between **autotrophs** and **heterotrophs**. Autotrophs generate their own energy, whereas heterotrophs consume other organisms for energy. Consider your average day and answer the following questions, posting your answers on the '[Heterotrophs forum](#)':

1. How much energy do you consume and where does it come from? Try to identify at least five things you consume for energy.
2. Are you consuming any autotrophs or do you consume other heterotrophs?
3. Select two heterotrophs you have consumed and draw a flow diagram of energy showing where its energy comes from until you get back to the autotrophs that start the process.

### Alternative explanations

The next video offers three different theories to explain the development of life on Earth, along with a brief discussion of natural selection and another concept called **catastrophism**. The first three theories attempt to explain abiogenesis, and they have a common theme: minerals, gases and other components combine to create an environment in which life can be sustained. The theories differ in terms of how and why these combinations occur, however.

Playing time: 3:46

[watch](#)

### Abiogenesis (5 coins)

Once you have watched the video above, decide which of the first three theories appeals to you the most and vote in the '[Abiogenesis choice](#)'.

### The evolution of knowledge

While there is broad agreement around how life on Earth evolved, there are still unexplained details, and current theories always represent our best guess based on available evidence. As new evidence emerges, scientific theories themselves evolve to accommodate it.

### Early inhabitants

There were millions of other species living on Earth before the evolution of modern humans, also called **Homo sapiens** ('wise man'). We all know about the dinosaurs, and before that there were **arthropods** - including sea scorpions (**eurypterids**) big enough to give you nightmares!

(<https://www.prehistoric-wildlife.com/images/species/0/large-eurypterid-size-comparison.jpg>)

*Eurypterid size chart, from [Prehistoric Wildlife](#)*

Playing time: 10:59

[watch](#)

The following video is a short introduction to dinosaurs:

Playing time: 3:47

[watch](#)

## Dinosaurs (5 coins)

Complete this activity once you've watched the above video about dinosaurs. Here, we'll work together to create a resource about dinosaurs for future students!

1. Find two more videos about dinosaurs that you think are good educational resources.
2. Look at the '[Dinosaur video forum](#)' to make sure they haven't already been posted by someone else.
3. Once you've found two videos that haven't already been posted, make a post on the '[Dinosaur video forum](#)' answering the following questions for each video:
  - What is the URL of the video?
  - Why is it a good educational resource?
  - What are three facts you have learned from it, in three or more sentences?

## Human evolution

There are many misunderstandings about evolution - have you ever seen a picture like this?

The first silhouette is a monkey, then there's a chimpanzee, and various other species evolving into a modern human. After looking at the image, you might well ask why monkeys still exist. That's the question the next video starts with, and it dispels a number of myths and misunderstandings about evolution. The bottom line is, the above image is wrong - we didn't evolve from monkeys! We *are* related to them, however:

Playing time: 5:41

[watch](#)

### The future

Humans are a **dominant species**, but this wasn't always the case - and it might not be in the future. Science fiction writers have explored this theme extensively, with the Planet of the Apes film series suggesting that humans will become extinct, to be replaced by apes.

This next video shows clips from all the films in the series. It's interesting to see how the sophistication of the apes and the reasonableness of the humans changes over time, showing how the series itself evolves.

Playing time: 10:11

[watch](#)

### Human extinction

Extinction occurs when a species dies out entirely, with no living members left. The dinosaurs are extinct, for example, as are sabre-toothed tigers - although other species of tigers still exist.

While natural occurrences such as asteroid strikes have been found to explain previous patterns of extinction, some scientists argue that humans are changing the natural environment in such a way that species are becoming extinct at an unprecedented rate. This is a period of time called the **Anthropocene**, marked by the point at which human behaviour began to have a strong impact on the Earth itself.

Playing time: 9:11

[watch](#)

## Activities

Complete at least 25 coins' worth of activities below.

### [Natural selection versus creationism \(5 coins\)](#)

Prior to Darwin and the theory of natural selection, explanations of life on Earth had a **theological** (religious) basis. **Creationism** is the notion that God created part or all of the universe, including life. **Young Earth creationists** argue that species did not evolve, but rather God created all of the species we see today. In contrast, the **Catholic Church** maintain that God set the process of evolution in motion, as explained by the theory of natural selection.

1. Research **creationism** and the theory of **natural selection** online.
2. Draw a three-part diagram that illustrates how the the theory of **natural selection** differs from **Young Earth creationism** and **evolutionary creationism**. Indicate how each theory explains the origin of species.
3. Make sure your diagram shows similarities and differences between the three theories.
4. Add a brief explanation to your diagram indicating where each theory gets its ideas from.
5. Upload your diagram to the '[Natural selection versus creationism submission](#)'.
6. Complete the '[Theory choice](#)' to indicate which theory you think is most likely.

### [The power of asteroids \(5 coins\)](#)

The Arthropods and dinosaurs most likely became extinct as a result of environmental changes following a massive asteroid impact. Research the following questions online:

1. What's the chance that another large asteroid will hit Earth?
2. Could another massive asteroid impact cause humans to become extinct, or would we find a way to survive?
3. What can people to do increase their chance of survival?

Answer the questions above on the [Asteroid impact forum](#), writing at least one sentence per question.

Reference each answer by copying and pasting the URL indicating where you got your information from.

Once you have posted, register your answer to question two above in the '[Asteroid impact choice](#)'.

### [Dinosaur classification poster \(10 coins\)](#)

1. There are two types of dinosaur: **saurischia**, **ornithischia**. These are divided into two groups each, for a total of four types of dinosaur. Research dinosaur types and find the name of the two types of saurischia, and the two types of ornithischia.
2. Make a poster about all four dinosaur types, including the following information for each type: appearance, size, diet, predators.
3. Upload your poster to the '[Dinosaur classification poster submission](#)'.

### [Evolutionary timeline \(10 coins\)](#)

1. Research and map the evolution of species from the origins of life on Earth to the present day.
2. Present your findings in a timeline.
3. Upload your timeline to the '[Timelines Wiki](#)'.
4. Compare yours with others to see if there are elements you have left out that others included, and vice versa. Your timelines may vary depending on what sources you researched, and what categories you used for defining species change, so don't expect everyone's to be the same.

### [Planet of the Apes \(15 coins\)](#)

1. Select one or two of the [Planet of the Apes films](#) and watch them in their entirety.
2. Write a movie review (if you watch two films, you can compare them) focusing on the relationship between humans and apes in the film and the extent to which this represents the state of nature. Your review should not just focus on whether you liked the film or not; it should be more of a discussion piece.
3. Discuss some of these questions in your review:
  - How does the film relate to Darwin's theory of natural selection?
  - What happens to the environment in the film, and why?
  - Are humans or apes better at surviving and reproducing in that environment?
  - What would need to happen in order for the situation in the film to become reality?
4. When you are done, upload your review the '[Planet of the Apes submission](#)'.

### [Prehistoric fiction \(20 coins\)](#)

**Speculative fiction** is a genre where the author asks 'what if...?' For this task, write a short story or [interactive fiction game](#) with one of the following premises: **What if...**

- Time travellers visited the period before the evolution of homo sapiens, when dinosaurs and other prehistoric species ruled the earth?
- Dinosaurs and/or other prehistoric species were brought into the present time?
- Natural selection caused a non-human species to become dominant on Earth?
- The asteroid impact which caused dinosaurs to become extinct never happened?

When you've finished your story, post it on the '[Prehistoric fiction forum](#)', and provide at least one sentence of constructive feedback on someone else's story.

This next video might help stimulate your imagination - it explores what the world might be like if the dinosaurs hadn't gone extinct!

Playing time: 3:48

[watch](#)

### [The Anthropocene \(20 coins\)](#)

The **Anthropocene** is the name for the period of time during which humans have had a strong impact on the Earth, resulting in **anthropogenic** (human-made) climate change and a decline in **biodiversity** (the number of living species). Humans are changing the planet in such a way that if our behaviour continues uninhibited, the planet may become incapable of sustaining human life.

For this task, research the idea of the Anthropocene and create an infographic explaining the following, along with any other interesting information you come across:

1. What is the Anthropocene?
2. When did it begin?
3. What are its causes?
4. What are its consequences for the earth?
5. What are its consequences for living organisms, including humans?

When you are done, upload your infographic to '[The Anthropocene submission](#)'.

### [The evolution of science \(30 coins\)](#)

This is a very difficult activity so don't worry if you struggle, and don't be afraid to ask for help. Firstly, we need to understand **science**: it isn't technology, and it isn't just a body of knowledge. Science is a **systematic enterprise**, at the core of which is a **method**; a way of **investigating the world** that involves the following steps:

1. We observe a regularity in the world. For example, every time we drop something heavy, it falls to the earth.
2. Scientists create an explanation (called a 'theory') for the observed regularity. For example, Newton's theory of gravitation explains how heavy objects fall to the earth.
3. Scientists make more observations to **test** the theory. Sometimes, these observations take the form of an experiment.
4. If these new observations are not **consistent** with the theory, the theory is abandoned, replaced, or updated to match the new observations. In this way, scientific understandings continue to **evolve** and remain up-to-date with new discoveries!

In the case of evolution, people have long marvelled at how many different species there are. Darwin developed the theory of natural selection to explain this diversity of species. Scientists have since observed the world ever-more carefully, gathering mountains of evidence to test the theory of natural selection. All observations to date have been consistent with the theory of evolution, so they provide **evidence** in its favour. The details of the theory have been filled in since with our understanding of DNA as the mechanism by which organisms pass traits on to their offspring.

Science is an enormous enterprise, split into numerous branches and sub-fields, including: astronomy, biology, botany, chemistry, climatology, ecology, geology, human biology, meteorology, physics, psychology, neuroscience, oceanography, zoology

1. For this activity, select one area of science that interests you and research its history, taking notes as you go. Be sure to write down where you got your information from as you conduct your research, including any relevant books or URLs.
2. Create an educational YouTube video for people your own age explaining the evolution of thought in your chosen area. You can structure your work around the following questions, but don't just answer them without further thought: 1) What scientific field have you chosen? 2) What does it concern itself with and what questions does it attempt to answer? 3) What tools and methods are used by your chosen scientific field? 4) Where and when did your chosen field begin, and how has it changed over time? 5) What major discoveries have been made? 6) Where is your chosen field going and where might it go in future?
3. Upload your video to YouTube along with a full reference list in the video description. If you don't want to show everyone your work, feel free to make the video private or unlisted.
4. You're encouraged to post your video on the '[Evolution of science forum](#)' for others to learn from.

## Resources and Activities

### forum: Evolution research forum

Post two things that evolve below, aside from living beings.

Link: [Evolution research forum](#)

### forum: Heterotrophs forum

Answer the questions about autotrophs and heterotrophs below.



Link: [Heterotrophs forum](#)

### forum: Dinosaur video forum

Answer the following questions for each video: 1. What is the URL of the video? 2. Why is it a good educational resource? 3. What are three facts you have learned from it?

Link: [Dinosaur video forum](#)

### forum: Asteroid impact forum

1. What's the chance that another large asteroid will hit Earth? 2. Could another massive asteroid impact cause humans to become extinct, or would we find a way to survive? 3. What can people do to increase their chance of survival?

Link: [Asteroid impact forum](#)

### wiki: Timelines Wiki

Post your evolutionary timeline on a separate page below.

Link: [Timelines Wiki](#)

### choice: Abiogenesis choice

Which theory of abiogenesis appeals to you the most?

### choice: Theory choice

Which theory of the origin of species do you think is most likely to be true?

### choice: Asteroid impact choice

Could another massive asteroid impact cause humans to become extinct, or would we find a way to survive?

### forum: Prehistoric fiction forum

Post your prehistoric fiction story below.

Link: [Prehistoric fiction forum](#)

## **forum: Evolution of science forum**

Post your evolution of science video below.

Link: [Evolution of science forum](#)

## **assign: Natural selection versus creationism submission**

Link: [Natural selection versus creationism submission](#)

## **assign: Dinosaur classification poster submission**

Link: [Dinosaur classification poster submission](#)

## **assign: Planet of the Apes submission**

Link: [Planet of the Apes submission](#)

## **assign: The Anthropocene submission**

Link: [The Anthropocene submission](#)

# Humans and technology

## The history of technology

'Back in the old days...'

'When I was a kid...'

Have you ever heard someone start a story like that? These phrases are often used to introduce a tale of life without modern technology - without smartphones or computers, or the internet. Digital technology has advanced so much over the past three to four decades that many people remember what life was like before it, and they're struck by the change .

- How would you feel if your mobile phone was taken from you?
- How would you feel if you had never had it in the first place?
- Would you be the same person you are now?

For many older people, the loss of their mobile phone would represent a return to the good old days! In this video, comedian Ellen DeGeneres explains some of the technological changes that have occurred during her lifetime:

Playing time: 2:59

[watch](#)

### History of technology (5 coins)

Select a piece of technology you use on a daily or near-daily basis and answer the following questions, in at least one sentence each:

1. What is it?
2. What does it do?
3. How did people achieve the same thing before it was developed?
4. When was it invented?
5. What were the major developments leading up to the invention of your chosen technology?

Post your answers on the '[History of technology forum](#)'.

### Communications technologies

Many of the biggest technological developments that have occurred over the past few decades have been in the field of communication technology. Mobile phones have become nearly ubiquitous across large parts of the world, and they have all but replaced cable-based communications; many homes no longer have a landline, and each person tends to have their own phone number and account.

Watch this next video for a quick history of communication, beginning with gestures and cave paintings!

Playing time: 5:55

[watch](#)

## Rate of change (5 coins)

Not only does technology develop over time, but so too does the speed at which it develops - this is referred to as the rate of technological change.

1. Once you've watched the video above, create a timeline of the development of communications technologies. Your timeline should be more detailed than the video above, so you will need to do your own research. Include at least 15 technologies, beginning with the development of cave paintings. Moving forward to the 20<sup>th</sup> century, other technologies you might want to include are: telex machines, fax machines, big mainframe computers, and World War II code-breaking machines. Upload your timeline to the ['Rate of change submission'](#).
2. Discuss following questions, based on your research:
  - What patterns can you see in the rate of technological change?
  - What sort of equation could be used to represent this type of change?
  - What do you think the rate of change will be like over the next ten years?
  - Will we see as many changes as we saw around the millennium? Or will it slow down? Will we see a reversal in the rate of change?

Post your response on the ['Rate of change forum'](#). Write at least three sentences in total, and be sure to explain the reasons for your prediction.

## Our relationship with technology

We are so reliant on technology that it can be hard to imagine life without it. Media theorist Marshall McLuhan thought of technology as an extension of the self into the world:

'The wheel is an extension of the foot, the book is an extension of the eye, clothing an extension of the skin, electric circuitry an extension of the central nervous system.'

What would the mobile phone be an extension of? Our hands? Our voices? Many people have a close relationship with their smartphone and feel anxious if it's not around. Some people even experience **phantom vibration syndrome**, which means they think their phone is vibrating even when it isn't - this is a kind of tactile (touch) hallucination!

The next video is spoken word piece by Gary Turk that looks at what people might be missing by using their phones too much:

Playing time: 4:58

[watch](#)

## Look Up (5 coins)

Complete this activity after watching the video above.

1. What do you think about the video? Does it accurately depict your relationship with technology, or is Gary out of touch? Is digital communication antisocial like the video says, or is it just as social and valid as face-to-face interaction? Are online friendships false, or just as real and meaningful as face-to-face ones? Do social media make us lonely or do they bring us together? Is time spent online wasted or less valuable than time spent offline? Do the answers to these questions depend partly on how we use these technologies?
2. Post your thoughts on the ['Social media forum'](#), either as a new topic, or in response to someone else's post.
3. Once you have posted in the forum, vote in the ['Look Up choice'](#) - do you agree or disagree with the video?

## Social media poem (5 coins)

Complete this activity once you've done the one above.

1. Write a poem or spoken word piece about your relationship with smartphones, the internet and/or social media. It doesn't have to advocate for non-use like the video above - just be honest about how you feel. It should be at least 15 lines long. Feel free to record yourself performing it, either as video or audio, and upload it to YouTube.
2. Post your piece in the '[Poetry forum](#)' to see how your experiences differ from others'.

### Healthy smartphone use (5 coins)

If you have a smartphone, this activity provides an opportunity for you to reflect on your use of technology.

1. Read '[9 ways to know your smartphone is a problem](#)' by Dr Mark Williams.
2. Complete the '[Healthy smartphone use template](#)' to see if you have a healthy relationship with your phone.
3. Vote in the '[Smartphone choice](#)' to indicate how many of the nine criteria you meet.
4. Calculate the mean score from all votes on the '[Smartphone choice](#)'. Do you meet more criteria than the mean? Fewer? About the same?

### Smartphone experiment (5 coins)

One way to find out how technology affects us is to remove it.

1. Choose a day in advance when you should be able to reduce your smartphone use.
2. Tell someone which day you have chosen - a friend, family member, or teacher.
3. On your chosen day, put your smartphone somewhere you can't see it in the morning, and record the time.
4. Leave your phone there for as long as possible, without touching it or looking at it.
5. Make a note of the time when you touched your phone again, and calculate how long you put it away for.
6. At the end of the day, answer the following questions on the '[Phone experiment forum](#)':
  - How long did you go without your phone?
  - How did you feel without your phone?
  - What difficulties did you have without your phone, if any?
  - Why did you go back to your phone?
  - How many criteria did you meet on the 'Is your smartphone a problem?' template?
  - Would you like to decrease the number of smartphone problem criteria you meet? Why or why not?

## Work and technology

### The Industrial Revolution

The Industrial Revolution was a period of major technological change that occurred in Europe during the 18<sup>th</sup> and 19<sup>th</sup> centuries. Before this, people would live and work their own land to grow food, make clothes and provide for themselves and those around them. During the Industrial Revolution, people began to work in cities and earn a wage in order to buy food, clothes, accommodation and so on. The next video explains how this change occurred in America.

Playing time: 8:10

[watch](#)

The Industrial Revolution started in Britain and spread across the world. The reasons for this are complex. Some are technological, some are cultural, and some are economic - for example, the establishment of the Bank of England, and the creation of the stock exchange. The next video explores the causes of the Industrial Revolution:

[watch](#)

### Australian industrial revolution (5 coins)

The Industrial Revolution occurred at different rates across the world, beginning around the mid-1800s in Australia.

1. Watch the two videos above and see if you can map similar patterns of change in Australia. For example, when were the first cars produced here? Who opened the first factory? Where were the first electricity plants built?
2. Add three new facts to the '[Australian Industrial Revolution Wiki](#)'. Let's see what we can uncover about Australia's industrial history, together.

### Automation

Work can sometimes be done more efficiently by technology, reducing the need to hire people. This is referred to as '**automation**', because the work is done automatically by a machine. Many manufacturing jobs are now done by robots, for example.

Some people resisted the introduction of technology into the workplace during the Industrial Revolution, worried that machines were taking their jobs. The original group of protesters were known as '**Luddites**', and this term is often used as a label for those who are seen as anti-progress or anti-change. This is a misrepresentation, however. The Luddites were not against progress or change - they were against the economic changes brought about by the Industrial Revolution:

Playing time: 2:18:

[watch](#)

This next video looks at some of the changes we may see with technology in the workplace. It was made in 2018 and it's already becoming out of date, with the rate of change outpacing predictions:

Playing time: 3:14:

[watch](#)

### My future job (5 coins)

The video above ends by asking if you would like a job linked to the digital world. For this activity, think of a job for the future that doesn't exist yet. Then answer the following questions about your job on the '[My future job forum](#)':

1. What will the title of the job be?
2. Why will it be necessary?
3. What will people do in the role?
4. What will need to happen in order for the job to be created?
5. How could you contribute to the creation of this job, if at all?
6. Would you want this job for yourself? Why or why not?

### Misuse of technology in the workplace

Technology is often misused in the workplace, with some employers disciplining people for using social media or playing video games on the job. Other examples of misuse include using the internet to search for inappropriate or illegal material, using work technology for personal gain, and filming things which your employer might not want made public.

## Activities

Complete at least 25 coins' worth of activities below.

### [Past, present and future jobs \(5 coins\)](#)

Jobs continually change with new technology. Journalists used to phone news stories in to a pool of people who would sit and type what they were saying over the telephone. Now, journalists write their stories on a computer and email them in. Journalists are already beginning to publish directly to their own blogs, and newspapers as we know them may not exist in future.

1. Find a job that replaced another job with the introduction of new technology.
2. Make a prediction about what the future version of that job might be. Will it continue to exist? If so, in what form?
3. Post your ideas in the '[Changing jobs forum](#)'.

### [Four Industrial Revolutions \(10 coins\)](#)

We only discussed one Industrial Revolution above, but some commentators identify four, with the most recent one taking place in the current century. It is characterised by major advances in fields once thought to be science fiction, including 3D printing, genome editing, augmented reality, and artificial intelligence.

1. Research the four Industrial Revolutions, and take notes on the technologies that define them, as well as the time periods they cover.
2. Design an infographic to represent your findings.
3. Add your infographic to the '[Industrial Revolutions Wiki](#)'.

### [Historical film review \(10 coins\)](#)

There are a number of feature length films about the history of technology.

1. Watch one of the following films in its entirety:

#### **Hidden Figures (2016)**

This film is about NASA and the launch of the Apollo moon mission. [watch](#)

#### **The Imitation Game (2014)**

This film is about British code-breakers during World War II. [watch](#)

2. Write a review of your chosen film, commenting on its historical accuracy. You will need to do additional research to learn about what really happened. Your review should be at least 300 words.
3. Upload your review to the '[Historical film review submission](#)'.

### [Future film review \(10 coins\)](#)

1. Choose a science fiction film from the list below. Some of them feature disturbing content, so be sure to check with an adult that you're old enough to watch it.
  - 1984 (1984)
  - 2001: A Space Odyssey (1968)
  - The Abyss (1989)
  - A.I. (2001)
  - Arrival (2016)
  - Brazil (1985)

- Close Encounters of the Third Kind (1977)
  - Contact (1997)
  - District 9 (2009)
  - Ex Machina (2014)
  - Fahrenheit 451 (1966)
  - Frequency (2000)
  - Gattaca (1997)
  - Ghost in the Shell (1995)
  - Gravity (2013)
  - I Am Legend (2007)
  - Independence Day (1996)
  - Interstellar (2014)
  - I, Robot (2004)
  - Jurassic Park (1993)
  - The Martian (2015)
  - Men in Black (1997)
  - Minority Report (2002)
  - Passengers (2016)
  - Soylent Green (1973)
  - Starship Troopers (1997)
  - Sunshine (2007)
  - The Terminator (1984)
  - The Thirteenth Floor (1999)
  - Twelve Monkeys (1995)
  - The Terminator
  - Terminator 2: Judgment Day (1991)
  - WALL-E (2008)
  - WarGames (1983)
2. Watch your chosen film and take notes on its vision of the future - When is it set? What does the world look like? What technology do you see? How is society organised?
  3. Write a review of your chosen film. Be sure to comment on how realistic it is: Could these things ever occur? If so, how and when? You will need to research the science fiction concepts in your chosen film to see if they're realistic. Concepts featured in the films above include: artificial intelligence, robots, cyborgs, aliens, plagues, space travel, genetic engineering, weapons, pollution, surveillance technology, virtual reality, cyberspace, time travel, and climate change. Your review should be at least 300 words.
  4. Add your review to a new page of the '[Future film review Wiki](#)'.

### [Luddites \(10 coins\)](#)

The Luddites resisted technology because it replaced human workers, removing their ability to earn a living.

1. Research the future of work and identify one technology that will replace human workers.
2. Consider whether you support the change or not - are you a Luddite? Should automation be supported or opposed? What happens to workers if they lose their jobs? Will the workforce be able to adapt to these new technologies? Make your argument in at least 200 words, and post it on the '[Luddite forum](#)'.
3. Vote for or against automation in the '[Automation choice](#)'.

[Home technology audit \(10 coins\)](#) Complete the '[Home technology audit template](#)', and upload it to the '[Home technology audit submission](#)'. To complete the template, you will need to post in the '[Home technology audit forum](#)'.

### [Great Australian inventions \(15 coins\)](#)

1. Research a technological innovation that occurred in Australia and was subsequently used across the world.



2. Post at least 250 words about your chosen innovation, its development and widespread adoption on the '[Great Australian inventions forum](#)'.

### [Morse code transmitter \(30 coins\)](#)

1. Create a battery-powered **Morse code transmitter**. There are many ways to do this, and a number of guides available online. Here's a simple how-to to get you started:

Playing time: 2:00

[watch](#)

2. Record a video of your creation transmitting a sentence in Morse code, and upload it to YouTube. It's easiest to do this using a smartphone - instructions can be found [here](#).
3. Post your video on the [Morse code transmitter forum](#) along with a description of at least three sentences explaining how you made it and how it works.
4. Respond to someone else's post, and see if you can **decipher** their Morse code message.
5. Create your own **cipher** by making a **key** indicating how your machine can be used to transmit different letters or sounds. For example, in Morse code, 'A' is a short sound followed by a long sound. In your cipher, 'A' could be a single short sound - it's entirely up to you.
6. Record and upload a video transmitting a message in your new cipher.
7. Post your new video in response to your earlier post on the '[Morse code transmitter forum](#)'. Be sure to include the key so others can decipher your message.

## Resources and Activities

### forum: History of technology forum

1. What is it? 2. What does it do? 3. How did people achieve the same thing before it was developed?
4. When was it invented? 5. What were the major developments leading up to the invention of your chosen technology?

Link: [History of technology forum](#)

### forum: Rate of change forum

Answer the questions about the rate of technological change below.

Link: [Rate of change forum](#)

### forum: Social media forum

What do you think about the 'Look Up' video?

Link: [Social media forum](#)

### choice: Look Up choice

Do you agree or disagree with the 'Look Up' video?

### forum: Poetry forum

Post a poem about your relationship with smartphones, the internet and/or social media below.

Link: [Poetry forum](#)

### choice: Smartphone choice

How many of the nine criteria do you meet in the '9 ways to know your smartphone is a problem' book?

### forum: Phone experiment forum

Answer the questions about your experience with the smartphone experiment below.

Link: [Phone experiment forum](#)

### wiki: Australian Industrial Revolution Wiki

Add three facts about industrialisation in Australia to the main page of the Wiki below.

Link: [Australian Industrial Revolution Wiki](#)

### forum: My future job forum

Answer the questions about your future job below.

Link: [My future job forum](#)

### forum: Changing jobs forum

1. Find a job that replaced another job with the introduction of new technology. 2. Make a prediction about what the future version of that job might be. Will it continue to exist? If so, in what form?

Link: [Changing jobs forum](#)

### forum: Luddite forum

1. Research the future of work and identify one technology that will replace human workers. 2. Consider whether you support the change or not - are you a Luddite?

Link: [Luddite forum](#)

## wiki: Industrial Revolutions Wiki

Add your infographic about the four Industrial Revolutions to the main page below.

Link: [Industrial Revolutions Wiki](#)

## wiki: Future film review Wiki

Post your future film review on a separate page below.

Link: [Future film review Wiki](#)

## choice: Automation choice

Are you for or against automation?

## forum: Home technology audit forum

Post a list of technology in your home below, along with your table from the 'Home technology audit template'.

Link: [Home technology audit forum](#)

## forum: Great Australian inventions forum

Research a technological innovation that occurred in Australia and was subsequently used across the world. Post below about your chosen innovation, its development and widespread adoption.

Link: [Great Australian inventions forum](#)

## forum: Morse code transmitter forum

Post about your morse code transmitter below. Post any messages you transmit with it, too.

Link: [Morse code transmitter forum](#)

## resource: 9 ways to know your smartphone is a problem

**Resource file:** 9 ways to know your smartphone is a problem.pdf

**resource: Home technology audit template**

**Resource file:** Home technology audit template.docx

**resource: Healthy smartphone use template**

**Resource file:** Healthy smartphone use template.docx

**assign: Rate of change submission**

**Link:** [Rate of change submission](#)

**assign: Historical film review submission**

**Link:** [Historical film review submission](#)

**assign: Home technology audit submission**

**Link:** [Home technology audit submission](#)

# The nation state, wars and territorialism

## Tribes, empires and nation states

### Borders

When dinosaurs roamed the earth, they did not pay attention to national borders, geopolitical boundaries, or what country they were in - in fact, countries as we know them didn't exist! These are all human ideas, rooted in power (politics), money (economics), and social factors (including culture). More people have died for their nation state than any other reason, with World War II reaching an estimated death toll of 75 million people. How does this happen?

### Empires

Before independent nations, there were two major forms of societal organisation:

1. **tribes**: smaller communities which self-organised at a local level
2. **empires**: larger communities which invaded other parts of the world and declared them theirs

The modern Australian nation state was established as part of the British Empire, which at its peak encompassed about a quarter of the world's population at the end of the 19<sup>th</sup> century, across more than 33,700,000 km<sup>2</sup>!

Watch the next video for a quick overview of some empires and their territorial reach. As you watch, take note of how many empires were impacted on by the two World Wars.

Playing time: 10:18

[watch](#)

### Historical empires (5 coins)

1. Create a list of five historical empires, and find the following facts for each empire:
  - the total area of land they laid claim to at a particular point in time
  - the total population under their rule at that point in time
2. For each empire, calculate the following two values:
  - the land laid claim to as a percentage of Earth's total land above water (roughly 500,000,000 km<sup>2</sup>)
  - the population under their rule as a percentage of the earth's total population at that point in time (you can find the total human population by year [here](#))
3. Upload your list to the '[Historical empires submission](#)'.

### Tribes

Ever since the beginning of human history, people have tried to conquer one another's land, extending their sphere of control. The next video differentiates between a community, a movement, and a tribe.

Playing time: 7:38

[watch](#)

### Tribal definition (5 coins)

The video above argues that a tribe is defined by the existence of a common enemy. Answer the following

How did we get here?

v.1.0.0

questions in at least two sentences each, and post your answers on the ['Tribal definition forum'](#):

1. Do you agree that members of a tribe necessarily have a common enemy? Why or why not?
2. Why else might a tribe form?
3. Find another definition of tribe supports your ideas, or come up with a definition that's broader than the one in the video above.

### From tribalism to the nation state

A nation state is a clearly bounded area of land ruled by its own government, inhabited by people who have a shared identity. The next video outlines the concept further:

Playing time: 8:51

[watch](#)

### Australian nation state (5 coins)

Consider the notion of the nation state as it applies to Australia, then answer the following questions on the ['Australian nation state forum'](#), in at least two sentences per question. You can post in response to someone else and comment on what they have said in your answer, or you can start a new thread.

1. Which identity is more important to you: your national identity (i.e. 'Australian'), state identity (e.g. 'South Australian', 'Victorian' etc.), or ethnic identity?
2. Are there cultural differences between the different states and territories in Australia?
3. Does your regional identity differ depending on context?

## Territorialism

### Territory

Territorialism stems from the idea that people can own land, and that there are rights associated with land ownership. Land owned by a particular person or group is sometimes referred to as their **'territory'**.

Territorialism can affect people at an individual level through their right to own a home, and at a national or international level when different cultural groups claim territorial independence and strive to establish their own nation states. For example, the Balkan states split from Russia, and more recently, South Sudan split from the Republic of the Sudan in 2011.

### The legacy of empire

Because the nation state is such a complex idea, the notion of land ownership can vary around the world. In **Zimbabwe**, for instance, there has been a movement to challenge the right of foreigners to own land. This began in response to unequal land ownership created by the British Empire's former occupation of the area, under which it was called **'Rhodesia'**. Zimbabwe is just one of many modern nation states that continue to be affected by the legacy of empire.

The British Empire in particular created many difficult issues that remain unresolved to this day. Around 700 distinct language groups lived in Australia before the British Empire invaded Australia, beginning with the **First Fleet** in 1788. Indigenous Australian populations still seek legal recognition for land that was taken from them.

The next video outlines the **Mabo Case** which introduced the legal concept of **native title** to Australia:

Playing time: 3:25

[watch](#)

### Native title (5 coins)

Native title cannot be granted over private property, so the courts still privilege private land ownership over native ownership. Is this fair? Post your thoughts on the '[Native title forum](#)'. Feel free to respond to someone else's post or start a new thread. Be sure to give reasons for your view, and write at least three sentences.

## War

### The causes of war

We can start to understand how wars break out by drawing on the concepts of empire, land ownership, and the nation state. Wars occur for all sorts of reasons, but we can identify some common themes:

- Some wars involve a group of people fighting for **independence** from an empire, and the establishment of their own nation state. The American Revolutionary War (1775-1783), for example, saw the British colonies in America fight for independence against the empire.
- **Civil wars** are fought between different cultural or political groups within the same nation. Examples include the American Civil War (1861-1865), the Spanish Civil War (1936-1939), and various wars in the Middle East where different religious groups have fought to govern one another.
- **World War I** (1914-1918) and **World War II** (1939-1945) were especially complex, fought for a multitude of reasons. One central motivation was territory - either the effort to expand it by invading other countries, or to stop this from happening.

The next video is made by an ex-soldier who reflects on his own experience and the nature of war.

Playing time: 8:06

[watch](#)

### Causes of war (5 coins)

1. Select a war of your choice and research its causes, then answer the following questions in a total of at least six sentences:
  - When and where did the conflict occur?
  - Who were the major players and what were their motivations?
  - What sequence of events lead to the conflict?
2. Post your response on the '[Causes of war forum](#)', along with a reference list.

### International law

There are rules that specify how wars should be fought, and how people should be treated during a war. These rules are governed by international law, and people can be prosecuted for **war crimes** if they break them. This video provides a bit more information about international law:

Playing time: 4:43

[watch](#)

### ICC database (5 coins)

War criminals are sometimes prosecuted by the International Criminal Court in The Hague, Netherlands.

1. Choose a case from the [ICC website](#) and find the following:

- The name of the accused
- A photograph of the accused
- A description of the charges
- The stage of proceedings (pre-trial, trial etc.)
- The outcome, if the trial has finished
- One other interesting fact about the case

2. Create a page for that case on the '[ICC Wiki](#)', including all the information above.

## Peace

### The United Nations

Several international unions formed after World War II, as nation states realised the importance of peace and unity moving forward. The **United Nations** was established at this time to prevent future wars. They are **non-interventionist**, so they refrain from interfering with the affairs of nation states without sufficient justification. Because they strive to keep the peace, they attempt to resolve conflict using non-violent means such as **diplomacy**.

### My Peace Prize (5 coins)

You can read a list of **Nobel Peace Prize** laureates [here](#). If you could award a peace prize to anyone, who would it be and why? You're free to choose a public figure or someone you know personally. Post your response in the '[My Peace Prize winner forum](#)' to publically recognise your nominee.

## Activities

Complete at least 25 coins' worth of activities below.

### [Terra nullius \(5 coins\)](#)

When Captain Cook landed in Australia in 1770, he declared the land 'terra nullius,' which means 'nobody's land'. He then proceeded to claim Australia for the British Empire (as it was then). In actual fact, people had lived in Australia for at least 65,000 years. When the British arrived, there were over 750,000 indigenous people living in over 250 different language groups.

1. Was Captain Cook's claim legitimate? Why or why not?
2. How do you think legal ownership of land should be determined? Why?

Post your response on the '[Terra nullius forum](#)'.

### [Tribes \(10 coins\)](#)

Even in modern nation states, people identify with various 'tribes', or group identities. A sports team is a form of tribe, for example, defined by loyalty and the presence of a common enemy. Brand loyalty can also become a form of group affiliation - some people like Apple iPhones, but others prefer Android devices. Consider the groups you belong to, and answer the following questions on the '[Tribes forum](#)'. Write a total of at least five sentences:

1. What groups do you belong to?
2. How do you show that you belong to them?
3. Could any of these groups be thought of as a tribe? Why or why not? Think about group loyalty, and the notion of a common enemy.

### [War machines \(10 coins\)](#)

Military technology has evolved throughout human history.



1. Choose a place and time with its own military tradition, at least 100 years in the past. Examples include World War I, ancient Greece, medieval England, and Japan during the Edo period.
2. Choose an area of military technology that applies to your chosen historical moment. Examples include: guns, melee weapons, medicine, clothing, armour, surveillance, communications, armoured vehicles, missiles, the navy, the air force .
3. Produce an infographic, website or educational video about the development of your chosen area of military technology to the present day. You should also comment on where that technology might develop in future. You can read about how to make infographics, websites and videos [here](#).
4. Add your infographic, website or video to the main page of the '[War machines Wiki](#)'. You can read about how to edit a Wiki [here](#).

### [Mabo Case \(15 coins\)](#)

Complete the '[Mabo Case template](#)' and upload it to the '[Mabo Case submission](#)'.

### [War crime film review \(15 coins\)](#)

***Note that this activity may contain distressing material.***

The Reader (2008) is a book subsequently made into a film about a young woman who is prosecuted for war crimes, having been a guard at a Nazi concentration camp during World War II. Take a look at the trailer below:

Playing time: 1:47

[watch](#)

1. Read and/or Watch The Reader (2008) and take notes on the justification Hanna Schmitz gives for her actions.
2. Write a review of the film, considering the case for and against finding her guilty. Your review should be at least 300 words.
3. Upload your review to the '[War crime film review submission](#)'.

### [Conscription debate \(15 coins\)](#)

'**Conscription**' refers to compulsory military service. Several nations have compulsory military conscription for nearly all young adults, including Israel and South Korea. In Australia, conscription was restricted to home service during World War I, but conscripts were sent to New Guinea and the surrounding islands during World War II. Conscripts were also sent overseas during the Vietnam War (1955-1975).

1. Like Australia, the US conscripted young men during the Vietnam War. Watch [this](#) video, where Rick Hazen shares his experiences as a draftee. ***Note that the video may contain distressing material.***
2. After watching the video, write at least three sentences on the '[Conscription forum](#)' explaining what you would do if you received a letter telling you to fight overseas or face two years' jail time. Feel free to start a new thread or respond to someone else's post.
3. Write a persuasive speech arguing for or against the following debate motion: 'Australia should have compulsory military service for young adults'. You can post your speech as a new discussion on the '[Conscription forum](#)', or you can write it in response to someone else's speech. For example, if

someone else argues for the motion, you can respond to them with an argument against it.

### [Imperial history \(20 coins\)](#)

For this activity, you will create an educational video or podcast about a particular empire.

1. Choose an empire that existed prior to World War I, aside from the British Empire.
2. Research the empire and noting key facts, being careful not to get bogged down in too much detail. Be sure to note where you get your information from, so you can write a reference list later. Here are some key facts you might like to include:
  - the name of the empire
  - where and when it existed
  - how it came into being
  - its system of government
  - its culture
  - its military
  - who it invaded
  - life under the empire
  - its fall (if appropriate)
3. Write a script including an introduction and an overview of the history of the empire, including some or all of the facts above. Aim for at least 650 words, or about five minutes of speech.
4. Record yourself reading the script in either audio or video format.
5. Edit your recording into either a podcast episode or an educational YouTube video. If you are making a video, you might like to include pictures, video clips, text, and other visual media.
6. Add a reference list to the end of your video or podcast episode, or in the upload description.
7. Post your work on the '[Imperial history forum](#)' for others to see.

### [National history \(20 points\)](#)

1. Select a country (other than Australia).
2. Create a timeline of the area's history, from the earliest records to the establishment of the modern nation state that exists there at present. Include at least six points on your timeline, along with at least one sentence of information for each one.
3. Add an image to each point on your timeline.
4. Add your timeline to the '[Nation state Wiki](#)' alongside other countries.

## Resources and Activities

### resource: Mabo Case template

**Resource file:** Mabo Case template.docx

### forum: Tribal definition forum

1. Do you agree that members of a tribe necessarily have a common enemy? Why or why not? 2. Why else might a tribe form? 3. Find another definition of tribe supports your ideas, or come up with a definition that's broader than the one in the video above.

**Link:** [Tribal definition forum](#)

## wiki: ICC Wiki

Add a page below for a case from the ICC website.

Link: [ICC Wiki](#)

## forum: My Peace Prize winner forum

If you could award a peace prize to anyone, who would it be and why? You're free to choose a public figure or someone you know personally.

Link: [My Peace Prize winner forum](#)

## forum: Conscription forum

What you would do if you received a letter telling you to fight overseas or face two years' jail time? Write a persuasive speech arguing for or against the following debate motion: 'Australia should have compulsory military service for young adults'.

Link: [Conscription forum](#)

## forum: Australian nation state forum

1. Which identity is more important to you: your national identity, state identity, or ethnic identity? 2. Are there cultural differences between the different states and territories in Australia? 3. Does your regional identity differ depending on context?

Link: [Australian nation state forum](#)

## forum: Native title forum

Native title cannot be granted over private property, so the courts still privilege private land ownership over native ownership. Is this fair?

Link: [Native title forum](#)

## forum: Causes of war forum

Select a war of your choice and research its causes, then answer the following questions: 1. When and where did the conflict occur? 2. Who were the major players and what were their motivations? 3. What sequence of events lead to the conflict?

Link: [Causes of war forum](#)

### forum: Tribes forum

1. What groups do you belong to? 2. How do you show that you belong to them? 3. Could any of these groups be thought of as a tribe? Why or why not? Think about group loyalty, and the notion of a common enemy.

Link: [Tribes forum](#)

### wiki: Nation state Wiki

Add your national history timeline on a new page below.

Link: [Nation state Wiki](#)

### forum: Imperial history forum

Post your video or podcast about imperial history here.

Link: [Imperial history forum](#)

### wiki: War machines Wiki

Add your infographic, website or video to the main page of the Wiki below.

Link: [War machines Wiki](#)

### forum: Terra nullius forum

1. Was Captain Cook's claim legitimate? Why or why not? 2. How do you think legal ownership of land should be determined? Why?

Link: [Terra nullius forum](#)

### assign: Historical empires submission

Link: [Historical empires submission](#)

### assign: Mabo Case submission

Link: [Mabo Case submission](#)

**assign: War crime film review submission**

Link: [War crime film review submission](#)

# Humans and the environment

## Ecosystems

### The biosphere

Every species on the planet has some effect on its environment and on other species. This complex network of effects creates an **ecosystem**. According to Cambridge Dictionaries, an ecosystem is 'a system, or a group of interconnected elements, formed by the interaction of a community of organisms with their environment'. The planet's ecosystem is called the **biosphere**, and it includes both living matter - animals, plants, humans - and non-living matter, including water, air, and rocks.

### Our environmental impact

All organisms affect their ecosystem in some way. Beavers, for example, build dams which divert water flow. This change in waterflow can then affect other parts of the ecosystem, including fish and vegetation. Humans have a greater impact on the biosphere than any other species, using technology that can disrupt natural processes. Examples include tarmac roads, non-biodegradable plastics, and houses with sewage run-off that might include bleach and disinfectant. Humans have impacted the ecosystem to such an extent that some geologists assign us our own epoch. The next video explains the scale of the impact that we have had on the environment:

Playing time: 5:29

[watch](#)

### My environmental impact (5 coins)

Consider the impact you have on the environment in a single day. Think about how you travel, what you wear, and what you eat. Also think about where the things you use consume come from, and what actions if any you take to support biodiversity or improve the environment for humans or other species.

1. Complete the '[My impact on the environment template](#)'. Don't be surprised if your final ratio is quite high. This exercise has been designed to raise awareness of how each and every one of us has an impact on the environment.
2. Upload the completed template to the '[My environmental impact submission](#)'.

### Making a change

Some people think there isn't much they can personally do to reduce their impact on the biosphere, given the scale of the issue - but if everyone thought that, then nothing would change! If we all think we can make a difference, we will. National Geographic recorded this video as a call to action, on the importance of 'us' and 'you':

Playing time: 4:23

[watch](#)

### Reducing your environmental impact (5 coins)

Research how to reduce your environmental impact, then answer the following questions on the '[Start and stop forum](#)':

1. What is one thing you could stop doing that has a negative effect on the environment?
2. What is one thing you could start doing that has a positive effect on the environment?
3. What, if anything, is preventing you from making these changes?

### **Man-made disasters**

There are a number of man-made disasters which have had an immediate, dramatic impact on the environment. This video explains eleven of them:

Playing time: 12:25

[watch](#)

### **Man-made disasters in Australia (5 coins)**

Most of the disasters in the video occurred some time ago, or overseas. In Australia, there have been several man-made disasters involving shipwrecks, train wrecks, and explosions in mines. The death toll has been relatively low in each case. Answer the following questions on the '[Man-made disaster forum](#)', either by starting a new thread or responding to someone else:

1. Why do you think Australia has managed to avoid the worst of these disasters?
2. Do you think Australia will continue to avoid the worst man-made disasters in future?

### **Fish deaths (5 coins)**

If you consider events which kill animals but not humans to be disasters, then the 2018-2019 Darling River fish deaths are a prime example. The government were accused of mismanagement, but they blamed the event on drought. There are similar conversations about the extent to which the 2019-2020 Australian bushfires were caused more by government mismanagement, or climate change.

1. Research the 2018-2019 Darling River fish deaths, and take notes on its various causes. An independent panel investigated the incident and published a report which you can read [here](#).
2. Weighing up the evidence and write at least five sentences arguing whether the fish deaths were caused more by drought, or government mismanagement.
3. Post your response on the '[Darling River fish deaths forum](#)'.

## **Climate change**

### **Carbon footprints**

'Carbon emissions' are gases that accelerate the greenhouse effect, causing the planet to warm up. This video explains the process in a bit more detail:

Playing time: 3:03

[watch](#)

Everyone has a 'carbon footprint' which represents the total amount of greenhouse gases they release into the environment. Countries, companies, homes and people all have carbon footprints. Some countries have

agreed to reduce their carbon footprint, as explained by the next video:

Playing time: 8:16

[watch](#)

The video above identifies coal as a key factor in reducing carbon emissions. Australia is one of the biggest coal exporters in the world, and there are heated disagreements about the impact this has on the environment. Attempts to extend the use of coal have been controversial, including plans to construct a new Adani mine in Queensland. Australia signed the Paris Agreement in 2016, agreeing to reduce its greenhouse gas emissions by 26-28% of 2005 levels by 2030. Although the government says it intends to 'meet and beat' this goal, it is reluctant to reduce coal use, and current policies are projected to result in [higher](#) emissions than 2005 by 2030.

### **The cost of renewable energy (10 coins)**

Arguments for the continued use of coal often rely on its economic benefits. Australia's coal industry is immensely profitable, and produces many jobs. Some climate activists argue that other, less environmentally destructive energy sources can be equally profitable.

1. Research the cost of renewable energy and coal-fired power in two or more Australian states. Summarise your findings and make a case either for or against coal-fired power. Your argument may vary for different states depending on how much they are producing and from what sources.
2. Post your findings on the '[Energy forum](#)', along with a reference list to show where you got your information from.

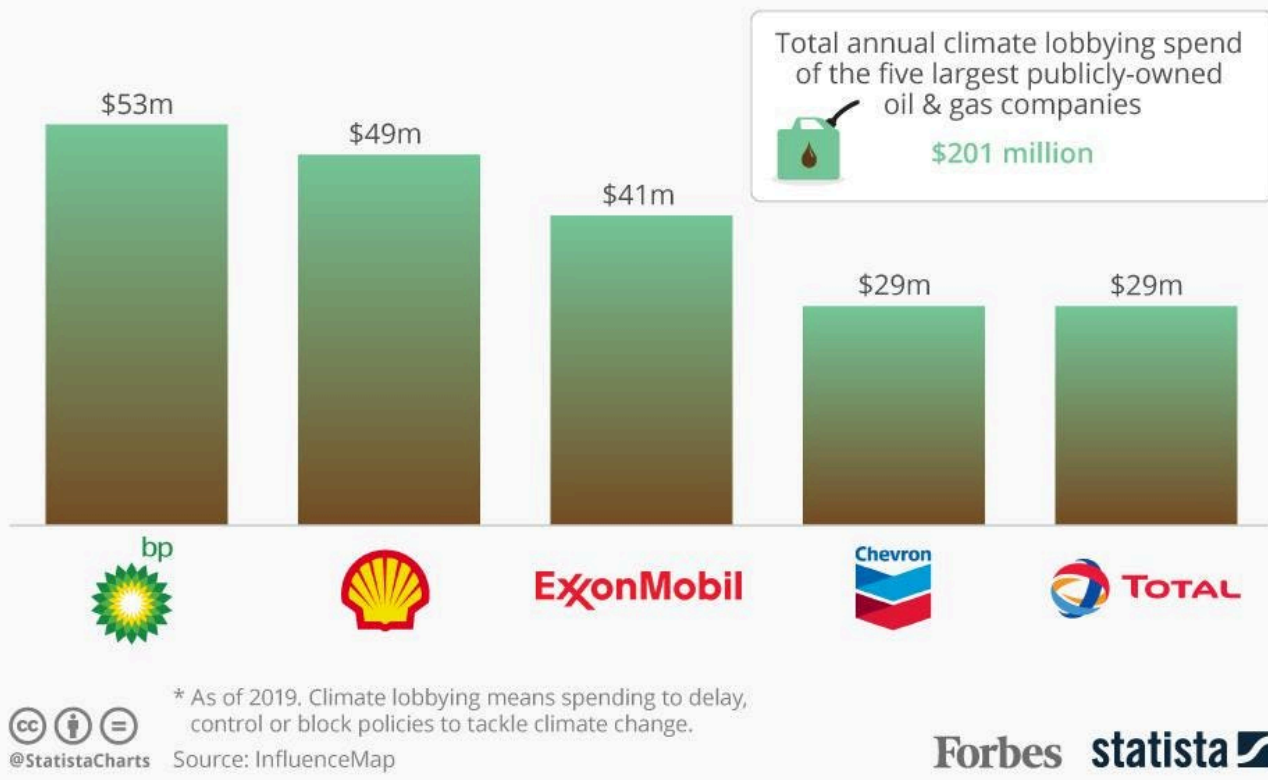
### **Climate change denial**

Nobody doubts that the climate is changing, although some argue that these changes are not due to human activity. These people are called 'climate change denialists' or 'climate skeptics', and they form a minority. Most people accept the scientific evidence that humans are a major factor contributing to climate change. Skeptics and denialists pretend the facts are up for debate, and refuse to take full responsibility for the human impact on climate change. Unfortunately, many climate skeptics are in positions of power, both in government and business. As an example, the following infographic shows how much money oil companies spend trying to delay, block or control efforts to combat climate change:



# Oil Firms Spend Millions On Climate Lobbying

Annual expenditure on climate lobbying by oil and gas companies\*



[Infographic](#) showing the money oil firms spend lobbying against efforts to tackle climate change

## Climate activism

Teenage climate activist Greta Thunberg addressed the United Nations Climate Action Summit in 2019, speaking for younger generations and generations to come. You can watch her full speech here:

Playing time: 5:19

[watch](#)

Greta was also interviewed on the Ellen DeGeneres Show, where she talks about how she got started, and how surprised she is that her message took off in the way that it did:

Playing time: 8:37

[watch](#)

## Immediate action (5 coins)

It's easy to postpone taking action, even when you really care about something. Many commentators believe Australia has taken too long to enact effective policy to tackle climate change, for example.

1. Think of an issue you feel strongly about - it could be climate change, or something else.
2. Think of something you can do right away to cause positive change, and post it on the '[Right here, right now forum](#)' as a call to action.

## Activities

Complete at least 25 coins' worth of activities below.

### [Ecosystem photography \(5 coins\)](#)

1. Take photos of three things in your local environment that contribute positively to the ecosystem.
2. Take photos of three things in your local environment that harm the environment or disrupt the ecosystem.
3. Write a caption for each photo explaining the role of its subject in the ecosystem.
4. Post your photos along with their captions in the relevant page on the '[Ecosystem photography Wiki](#)'.

### [Reducing carbon emissions \(10 coins\)](#)

1. Find three things Australia/Australians could do to reduce its carbon emissions.
2. Give an indication of the size of reduction that could be achieved if the behaviour change was adopted fully, partially or by a small number of people only.
3. Post your ideas and calculations in the '[Carbon emissions reduction forum](#)'.

### [Investigating your carbon footprint \(15 coins\)](#)

An individual's carbon footprint is largely indirect, with emissions occurring as a result of processes that allow them to use a particular product. For example, many carbon emissions result from the production and transport of food, clothes, and electronics.

1. Choose one piece of clothing you own, one item of food, and one electronic device.
2. For each item, create a flowchart indicating the various steps involved in its production and transport, resulting in you having personal access to it. Go back as far as you can through the entire process.
3. Comment on the possible environmental impact at each stage of each flowchart.
4. Convert your flowcharts into images and add them to the '[Carbon investigation Wiki](#)'.

### [Floods and drought \(15 coins\)](#)

Complete the '[Queensland extreme weather template](#)' to research three extreme flood events and three extreme drought events in Queensland, and upload it to the '[Floods and drought submission](#)'. Use a range of measurements such as mean, median and mode to establish that there was actually a flood/drought, and represent these in a range of appropriate graphical forms.

### [My speech to Parliament \(20 coins\)](#)

Choose a subject you feel passionate about. It could be an aspect of climate change or something completely different. If you were going to deliver a speech about your issue to Parliament, what would you say? Greta Thunberg used two elements in her United Nations speech - she used facts, and she appealed to the audience's emotions.

Write a persuasive speech about your chosen issue, appealing to both the thoughts and feelings of your audience. Your target audience includes politicians in Parliament, and the Australian public.

1. Record your speech and upload it to YouTube (public or unlisted). You can use audio and video, or just audio.
2. Post a link to your speech on the '[My speech to Parliament forum](#)'.

3. Watch someone else's speech and respond with thoughtful and supportive feedback.

### [Climate figures \(20 coins\)](#)

In her speech to the UN Climate Summit, Greta Thunberg quotes figures on carbon emissions to support her argument. Complete the '[Climate figures template](#)' to discover some of the key numbers behind climate change. Upload the completed template to the '[Climate figures submission](#)'.

## Resources and Activities

### resource: My impact on the environment template

**Resource file:** My impact on the environment template.docx

### wiki: Ecosystem photography Wiki

Post your captioned photographs on the relevant pages below.

**Link:** [Ecosystem photography Wiki](#)

### resource: Queensland extreme weather template

**Resource file:** Queensland extreme weather template.docx

### resource: Climate figures template

**Resource file:** Climate figures template.docx

### forum: Start and stop forum

1. What is one thing you could stop doing that has a negative effect on the environment? 2. What is one thing you could start doing that has a positive effect on the environment? 3. What, if anything, is preventing you from making these changes?

**Link:** [Start and stop forum](#)

### forum: Man-made disaster forum

1. Why do you think Australia has managed to avoid the worst of these disasters? 2. Do you think

Australia will continue to avoid the worst man-made disasters in future?

Link: [Man-made disaster forum](#)

### forum: Darling River fish deaths forum

Were the fish deaths caused more by drought, or government mismanagement?

Link: [Darling River fish deaths forum](#)

### forum: Energy forum

Calculate the cost of renewable energy and coal-fired power in two or more Australian states. Summarise your findings and make a case either for or against coal-fired power below.

Link: [Energy forum](#)

### forum: Right here, right now forum

1. Think of an issue you feel strongly about - it could be climate change, or something else. 2. Think of something you can do right away to cause positive change, and post it below as a call to action.

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### forum: Carbon emissions reduction forum

1. Find three things Australia/Australians could do to reduce its carbon emissions. 2. Give an indication of the size of reduction that could be achieved if the behaviour change was adopted fully, partially or by a small number of people only. 3. Post your ideas and calculations below.

Link: [Carbon emissions reduction forum](#)

### wiki: Carbon investigation Wiki

Add your three carbon investigation flowcharts to the main page of the Wiki below.

Link: [Carbon investigation Wiki](#)

### forum: My speech to Parliament forum

Share your speech to Parliament below.

Link: [My speech to Parliament forum](#)

**assign: My environmental impact submission**

Link: [My environmental impact submission](#)

**assign: Floods and drought submission**

Link: [Floods and drought submission](#)

**assign: Climate figures submission**

Link: [Climate figures submission](#)

## Attachments

9\_ways\_to\_know\_your\_smartphone\_is\_a\_problem.pdf

Home\_technology\_audit\_template.docx

Healthy\_smartphone\_use\_template.docx

Mabo\_Case\_template.docx

My\_impact\_on\_the\_environment\_template.docx

Queensland\_extreme\_weather\_template.docx

Climate\_figures\_template.docx