Video/English/Subject
Lesson Plan and Guide

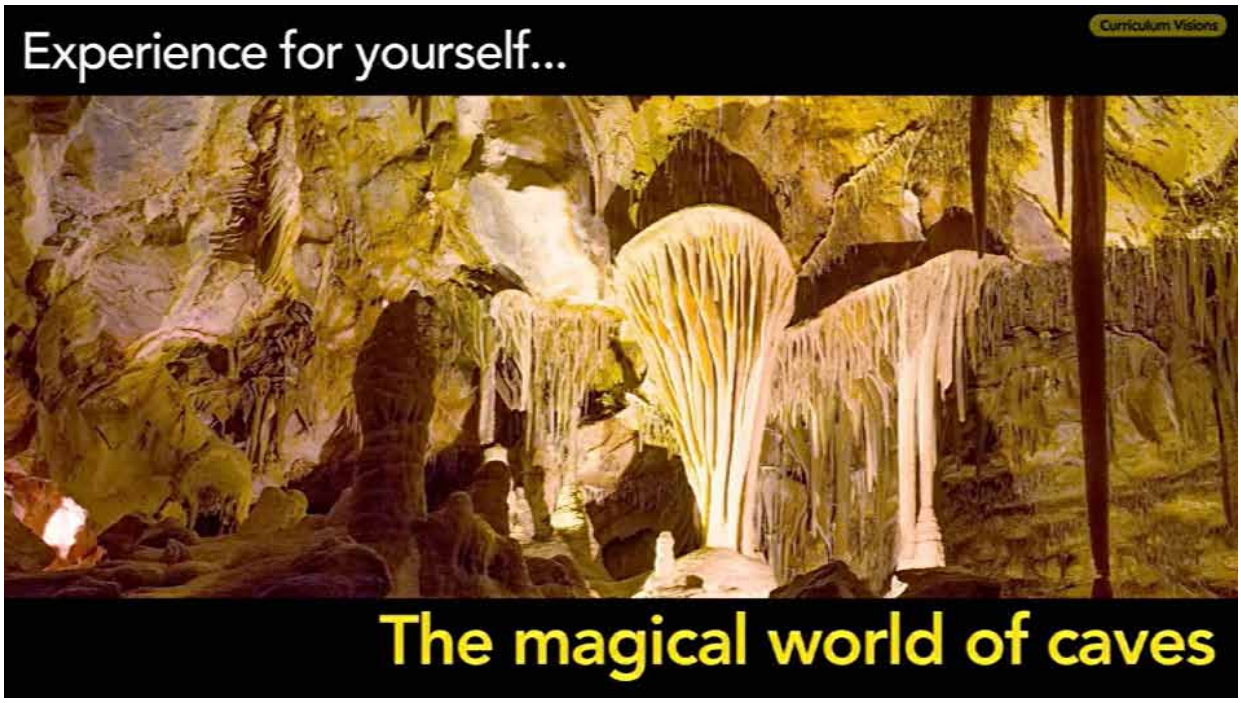
Turn our videos into exciting and informative ENGLISH as well as subject experiences using our lesson plan below.

Caves

Where does the video go when it's not on the home screen?
New and recent videos appear on the home screen. But then they always go to and stay in the subject areas.

Limestone caves
Teacher guide

This Lesson Plan and Guide matches the video The magical world of caves in Geography River and in search under Cave).



Objective

To understand why caves form

The basic process is
- solution
- another word is dissolving
- It is natural chemistry
- it needs carbon dioxide dissolved in streamwater
- it forms stalactites and stalagmites
- there are other shapes as well
- cave features are just another form of the rock making the cave

This video focuses on the way caves have formed.

This can be linked to Geography River.

The main illustration for this work is in the Cave Book (number 576) on page 18.

The video is fairly self explanatory, but you may wish to point out that water disappears down swallow holes (the proper term, not pothole) and emerges from springs.

Here is the transcript of the video so you can use it for comprehension and gps.

Video transcript

Come with me to somewhere dark and mysterious. Come with me underground into the blackness of the Earth.

Come with me, and explore one of the world's greatest chemistry sets. It is all around us.

Where am I? I am in a cave system, made of chambers called caverns joined by tall, narrow tunnels.

But first, before we see our chemistry set in action, look around and get your bearings.

The walls, ceilings and floors of the caves and tunnels are covered by glittering shapes. They are the result of chemistry in action. We call the ones hanging down stalactites - they hand tight to the ceilings. Then there are ones growing up. They are stalagmites. In some places stalactites and stalagmites join to form spectacular pillars that almost look as though they are holding the cave up.

But there are other shapes, too. There are wavy stalactites called curtains, and wonderful shapes that look like frozen waterfalls on the walls. They are called flowstone.

And everything is a beautiful white.

Some of the cave features are large and other small. But they have all been formed in the same way. Down here something truly mysterious is happening. Solid rock is being turned into liquid and becoming invisible. And water is turning to solid stone. Everything you see around you is the result of nature's chemistry.

But the chemistry doesn't begin down here. It begins in the open air high above. There, where the streams flow on the surface, they invisibly take in, or absorb, air. It is called dissolving. One of the parts of the air the water dissolves is oxygen. That is how water life gets the oxygen it needs to live. But the water can dissolve some of the other invisible gases in the air, too. And one of the most common and most important is called carbon dioxide. It's the gas you breathe out every second you are alive. But just like oxygen in the air you breathe in, you never see it.

What carbon dioxide does when it mixes with water is extraordinary. It makes the water into an acid. It's a very weak acid, but nature doesn't mind that. Nature has plenty of time. But an acid can dissolve some kinds of rock. And one of those rocks is limestone, the rock in which caves form.

Limestone if made of very strong blocks, and water can seep down the cracks between the blocks. As it flows through the cracks, it runs down the sides of the blocks, gradually dissolving them away.

So what happens to the dissolved limestone? It becomes invisible, but it stays inside the water – for the time being.

So carbon dioxide dissolves into water, water becomes acid, and the acid dissolves the limestone, making cracks bigger, and in some places producing caves over many thousands of years.

So where we are now has been dissolved out by carbon dioxide in water.

But it is not a one-way street. What can go into solution can come out again, and when it does it turns back into solid rock.

It happens like this. Water drips from cracks in the roof of a cave. There is more oxygen in the water than in a deep cave, and so it comes out of the air. The same happens to carbon dioxide. But the limestone was only in the water because it was dissolved by the carbon dioxide. So when the carbon dioxide comes out of the dripping water, the limestone does too. And as this happens when the water drips from the roof, the limestone coming out of the water sticks to the roof, making the start of a stalactite.

Some water drips to the ground before it can release its limestone, and instead it forms rock on the cavern floor. That is how stalagmites form.

And as most drips produce stalactites with stalagmites below them, these grow towards each other and sometimes makes pillars.

If the water seeps out of cracks in the walls, it comes out on the walls to make flowstone and so on.

In doing this simple job of chemistry, nature makes some of the most wonderful features in the world.

So now enjoy watching the cave features, and see if you can figure out how each one was formed.

Worksheet

Inside a limestone cave.

1. What rock does a cave form in?

2. Using the picture, mark on a stalactite.

3. Using the picture, mark on a stalagmite

4. Make up a poem about stalagmites and stalactites and how they grow from the ceiling and floor over thousands of years.

5. Why are caves like this tourist attractions?

6. What danger might there be in a cave after heavy rain?

7. Write a short journal telling of how you first found this cave by crawling down a tunnel from the surface.

Teachers: here are some generic gps questions you could add yourself by copying this text and adding appropriate words where there is an under-score:

14. Find and copy an example of a _____ from the video. (Noun, verb, fronted adverbial, adjective, conjunction)

15. Why do the words _____ have capital letters?

16. Write down a sentence from the text that contains punctuation. What is this punctuation used for?

17. The word _____ is a compound word. Write down the two root words it is made from.

18. Make a list of synonyms for the word _____

19. Write down any word that has a prefix in the text. Then think of two other words that have the same prefix.

20. Choose any word from the text and add a suffix.

21. Find a sentence that contains a subordinate clause. Write out the sentence and underline the clause.

22. Write down three words that come from the same word family as _____

23. Write the word _____ as a noun.

24. Write down all the compound words that have the word _____ in them that you can think of (ex: way)

25. Write down three adjectives from the text. Describe what each of them means.

26. Are there any modal verbs in the text (verbs that help to modify other verbs).