How to use
Unfolding Knowledge

For the minibook:
(1) pass it through your printer using DUPLEX setting with print to fit and page scaling switched OFF (so that you don't get white margins).
(2) fold once across the middle and cut along fold.
(3) staple or hot glue the spine to make a conventional book.
As you make more minibooks, keep the set in a box, and make class sets. Give them out as non-fiction reading units.
Make English comprehensions and summaries about them.
Help children to learn about how to help the planet by using examples like this.

Let's get outside to learn!

This is all about getting outside enjoying learning while you are out there. Every subject you study can be done outside, even if you might have to come inside to write things down. Geographers call it field trips, historians might call it local studies, scientists might call it experimental work.

But whatever it is being outside is all about observation. You look, you think about what you have seen, and then you develop what you have seen, fitting it into your curriculum, so it will enrich your studies. This interactive mat is all about showing you how to do that. Science, English, Maths, History and Geography are all around you. Enjoy them, keep fit and active, stay healthy and learn for your curriculum while you are doing it.

This topic covers

History: Roman roads

Science materials

Use out books:
Caring for our environment
Properties of materials
The Water Book

Maths

Suppose we want to build a new road. It has a tarmac (asphalt) surface, but there has to be a lot of crushed rubble below to take the weight of trucks. So how many 30 tonne trucks of material would be needed to make 4.5km of road that is 9m wide and half a metre deep?

45000m long x 9m width x 0.5 (stone) = ? Cubic metres.
Each cubic metre weighs 1.6 tonnes, so cu m x 1.6 = ? tonnes.
Finally, tonnes divided by 30 tonnes per load = ? Loads.

That's quite a lot of material. And where does it come from, and what difference does it make to the place where the stone is gathered?

Finished with me? Pass me to a friend or recycle me.

4

CurriculumVisions

On the road

A country road.

You use roads and pavements all the time, but have you looked at them closely to think about how they are made and why they are as they are? There is more to it than you might have thought.

For this fieldwork you should be accompanied by an adult for safety reasons. This field trip is to be done from the pavement. Do not go out onto the road.

A Roman Road

The Romans were famous for building roads with stone surfaces. We call them paved roads, and sometimes metalled roads. Broken rock (metal) comes from the Latin metallum, which means to quarry. We are going to compare modern roads with Roman roads. On pages 4-5 there is a picture of a Roman road to help you.

1. Look at the surface of a pavement (sidewalk) near to you. Is it flat or sloping? Is it made of many slabs (called paving stones) or a laid surface like the road? Does the Roman road have pavements?

2. Now look at the Roman road. Is it flat or curved over? What about your local road? Get down on your knees for this. Is the road flat or sloping from the centre? Is the slope steeper or gentler than a Roman road?

3. Now look between the pavement and the road. It is called the gutter. What do you find? Is the surface the same as the road or pavement or something else? Do Roman roads have gutters, too?

English

Part of a poem about roads to enjoy

The Way Through The Woods: Rudyard Kipling

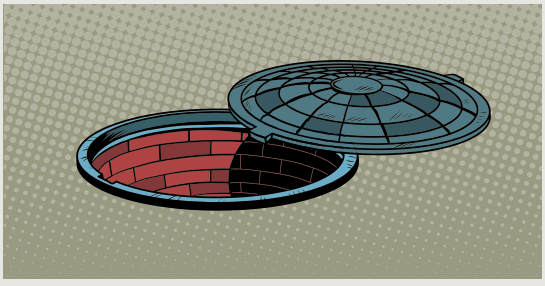
They shut the road through the woods
Seventy years ago.
Weather and rain have undone it again,
And now you would never know
There was once a road through the woods
Before they planted the trees.
It is underneath the coppice and heath,
And the thin anemones.
Only the keeper sees
That, where the ring-dove broods,
And the badgers roll at ease,
There was once a road through the woods.

1. What is a coppice?
2. What does that tell us about our roads and the long-term effect of nature?

more likely? Why is it much less likely that water from country roads would cause flooding?

8. Now walk along the road and look at the space between the houses and the pavements. How many people have tarmac, and how many have gravel? Why would gravel help to prevent flooding and so be good for the environment?

9. We now know that drainpipes are below pavements and roads. To get some idea of what other pipes are under your pavements and roads, look for inspection covers. How many different kinds can you find in a 200m stretch of pavement or road? Do the covers give any idea of what is underground?



4. Walk along the road until you find a grating in the gutter. Now can you explain why the road surface is sloping from the middle (cambered), and what this grating is doing? If unsure try looking on a rainy day.

5. What do you think the grating is connected to? Where might it lead to?

6. The picture on page 1 shows a country road. What is missing that you would find in a town or city? Why do you think that might be?

7. When rainwater goes into drains it goes in pipes to rivers. How might that make flooding