Brede High Woods

Educational Resources

Discovering Charcoal

Unit in brief

Session aims:

To explore and understand the process of charcoal making, focussing on a family in the 16th century. The pupils will find out what life was like for the people working in the woods and how the charcoal industry was important. They will learn how our dependence on charcoal has changed and the things we still use charcoal for today.

Curriculum Links

English Key Stage 2 –
Listen, understand and recall information from an account. Reading information, literature and poetry. Writing – handwriting and presentation, broaden vocabulary and writing poetry.

Science Key Stage 2 –
Materials and their properties – grouping and changing materials, separating mixtures of materials using filtering.

Design Technology Key Stage 2 –
Develop, plan and communicate ideas to build a woodland shelter using natural materials as a team, identify ways in which they can improve their structure. Work with materials to make a product and evaluate the product and consider improvements.

ICT Key Stage 2 –
Finding things out using the internet.

ICT Key Stage 3 –
Use and refine search methods.

History Key Stage 2 –
Knowledge and understanding of events, people and changes in the past. Local history and Tudor Britain.

Geography Key Stage 2 –
Knowledge and understanding of places and how they change over time. Increase knowledge and understanding of environmental change and sustainable development – how people can improve or damage the environment, and why and how people manage environment sustainably.

Art and Design Key Stage 2 –
Record historical information through drawing. Collect visual information in sketch form using charcoal. Create natural sculptures.

Physical Education Key Stage 2 –
Outdoors adventurous activities – working in teams to meet challenges.

Brede High Woods

Educational Resources

Discovering Charcoal

Structure	Activity title	QCA Curriculum links	Teacher notes	Student worksheets
Introduction	Unit in brief			None
Pre-visit activities	What is charcoal?	**KS2:** Sc1.b, 2.a, Sc3.1.a, 2.b.f.g, 3.c **KS3:** Sc1.2.a, 2.1.c, 1.3.a, 4.c.d.e.h ICT2.1.b	4 5	Compare and investigate 6 Second letter square phrase 7 Make a basic water filter 8
	Life of a Yellow Belly	**KS2:** Hi2.a.c, 4.a, 5.c, 7.10 En1, 2.a.b.c.d.e En2, 3.c.f, 5.a.b.d.g ICT1.a.b Art1.a, 2.c **KS3:** Hi1.2, 2.3 En2.2.a ICT2.1 Art2.1.d	10 11	Life of a Yellow Belly 12 13
On-site activities	Hearths, chimneys and kilns	**KS2:** PE11.a.b.c En1.4.c.d Art2.a	14 15	None
	Huts and shelters	**KS2:** PE11.a.b.c DT1.c.d, 2.c, 3.a.c **KS3:** PE3.e DT1.1.c, 1.2.a.b, 1.3.b	16	None

Brede High Woods

Educational Resources

Discovering Charcoal

Structure	Activity title	QCA Curriculum links	Teacher notes	Student worksheets
	Sketching memories	**KS2:** Art1.a.c, 2.a.b.c, 4.b **KS3:** Art2.1.a.d	17	None
Post visit activities	Recipe for charcoal	**KS2:** En1, 2.a.b.e.f En2, 3.a.e.f En3.1.a.b.c.d.e.f, 4,5 **KS3:** En1.3, 2.2.j.l.p, 2.3.a.b.d.f.g.k.p.q.s	18	None
	History board game	**KS2:** Ma2, 2.a Hi2.a.c, 7.10 **KS3:** Hi1.3, 1.4	19	None
	Making rush lights	**KS2:** Sc3, 2.b.f.g Sc4, 3.a DT2.a.b.c.f, 3.a.c, 4.a **KS3:** Sc1.3, 2.1 DT1.2, 1.3, 1.4	20	21

WHAT IS CHARCOAL?

TEACHER'S NOTES

WHAT IS CHARCOAL?

Session aims:

During this session, pupils will get to know charcoal using a simple comparison exercise to overcome any misconceptions and confusion with the similar looking substance of coal.

This is a classroom-based activity.

Use your white board to ask the class what they already know about charcoal and coal. Use the following information to help you to make spider diagrams with the class, to compare the substances and learn about the many uses for charcoal.

Key Stage 3. Following on from the introductory exercise ask the pupils to use the internet to research for the uses of charcoal.

Charcoal and coal

Charcoal is a black substance that looks like coal. It is in fact wood that has been burnt very slowly for a long time without air. All the water and other things that make up the wood are burnt away leaving mostly pure carbon behind. Charcoal is black, soft, light, brittle and porous. Charcoal is a man-made substance, which when burnt creates an intense heat, twice that of wood.

Coal is a natural fossil fuel that takes millions of years to form. It is made when plant material is unable to decompose because it is trapped by water and mud. As more material is added the pressure increases on the layers of plant material, and this pushes them together to make coal. Coal is a mineral rock, and it is also made up of carbon from the plants, but it is much harder than charcoal and forms naturally deep underground. Coal is burnt to create electricity; this is its primary use in modern times.

People discovered how to make charcoal hundreds of years before they found coal underground.

What can we use charcoal for?

- Fuel for smelting iron, refining steel and in forges
- 140 forges in Sussex in the 1600s used over five tonnes of charcoal each per week
- Gunpowder – charcoal plus sulphur and potassium nitrate/ salt petre
- Glassmaking
- Gas masks
- Cooking fuel – barbeques
- Filtration of drinking water until recently – today a form of refined charcoal is used
- Medicinal – dressing in wounds, remedy for stomach disorders, biscuits for diabetics
- Agriculture and horticulture – mixed with seeds.
- Dog biscuits and animal feeds
- Artists pencils – using willow stick charcoal

Investigate

Using the compare and investigate worksheet, ask the class to study the materials and fill in the table. This can be done individually or in pairs.

You will need a piece of each of the following per person or pair:

Charcoal

Coal

Scrap paper

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

WHAT IS CHARCOAL?

TEACHER'S NOTES

The second letter square phrase

Pupils can work alone or in pairs to discover the hidden message in the second letter square phrase activity.
(The answer is: People changed to coal fuel because there was not enough wood to make charcoal.)

EXTENSION IDEA

Make a basic water filter

This activity is suitable for years 5-9. Following the instructions on the worksheet, pupils will work in small groups to make a basic water filter, record the experiment results and answer the questions. Please note that this activity needs preparation time of a few days to collect the rust.

Answers to the water filtration questions

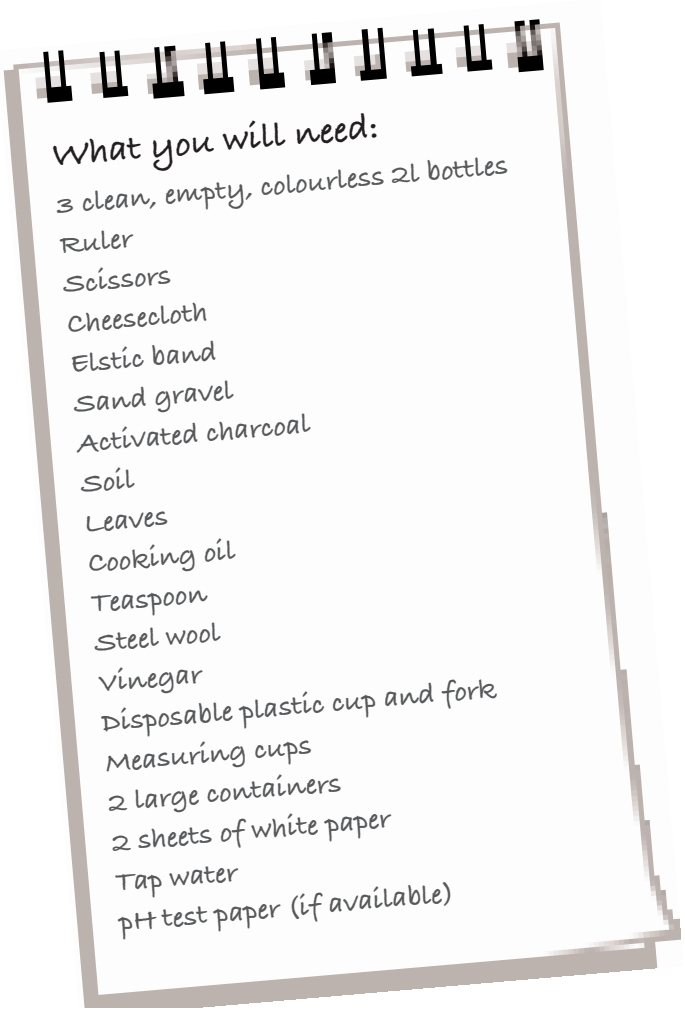
1. The filtration column removes leaves, dirt, cooking oil, rust, and vinegar. The filtered water contains no leaves, has no oil layer, has no noticeable vinegar smell, and the majority of the soil and the rust color is gone. If the filtered water is not completely clear and colorless, some rust and soil particles may remain. The pH changes from acidic toward neutral. pH results will vary depending on the initial pH of the tap water.

2. Large items such as leaves collect on the surface of the gravel and slow down the filter. A removable wire screen could be placed above the gravel layer to collect these items and dispose of them periodically.

3. None of the materials used in the filter removes bacteria from water. Water can be treated with chemicals such as chlorine, or water can be boiled for several minutes to kill bacteria.

4. Answers will vary. The filtering capacity of the column is unknown; students could test it by filtering additional measured samples of contaminated water and observing when the column allows contaminants to pass through.

5. The ground next to a stream could be composed of materials such as sand and gravel. If the hole were close to the stream, water would seep through the ground and fill the hole, passing through the sand and gravel, which would serve as a makeshift filter.



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

COMPARE AND INVESTIGATE

WORKSHEET

Look at the two materials and fill in the table below.

	Charcoal	Coal
Which one is the heaviest?		
Which one can mark the paper the easiest?		
Has the material always looked like this?		
Did nature or man change the material?		
If you were to heat the material, what would you have left at the end?		

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

THE SECOND LETTER SQUARE PHRASE

WORKSHEET

Locate the hidden message. Begin with the letter P in the top left box and move around the large square clockwise, writing every second letter on the dotted lines. The first letter is P. To find the second letter, count D-1, E-2, and write E on the next letter space. Continue around the large square, writing every other letter until all the spaces are filled.

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

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

MAKE A BASIC WATER FILTER

WORKSHEET

Clean and pure water is something many of us take for granted. Simply turn on the tap and water that's fit to drink comes gushing out. Much of the water that reaches our taps has been used for other purposes and has passed through various treatments to purify it for human consumption. In this activity, you will make your own water filtration column using charcoal and other materials. This process is similar to the treatment of the water from reservoirs such as the one at Brede before it reaches your taps.

What you will need:

- 3 clean, empty, colourless 2l bottles
- Ruler
- Scissors
- Cheesecloth
- Elastic band
- Sand gravel
- Activated charcoal
- Soil
- Leaves
- Cooking oil
- Teaspoon
- Steel wool
- Vinegar
- Disposable plastic cup and fork
- Measuring cups
- 2 large containers
- 2 sheets of white paper
- Tap water
- pH test paper (if available

Be Safe! Do not drink any of the water in this activity, included the filtered water. Harmful contaminants may remain.

1. Place a steel wool pad in the cup. Add vinegar and leave for 2-3 days, stirring it once daily using the fork until only rust is visible.

2. Measure 1 litre of tap water into one of the bottles and remove the label. Add the following items to the water, put the lid on tightly and shake the contents.

- ½ teaspoon of the rust from step 1
- ½ teaspoon of soil
- Two or three small leaves
- 15ml of vinegar
- 15ml of cooking oil

3. Place a sheet of white paper under the bottle from step 2. Observe and record the properties of the water. How does the water look? How does it smell? Test the pH using pH paper if available.

4. Make a water filtration column by using a pair of scissors to cut off the bottom 5cm of one of the 2 litre bottles. Remove the label and the lid. Cut two 7cm x 7cm squares of cheesecloth. Layer the two squares one on top of the other and cover over the top of the bottle where the lid would normally be. Secure the cloth using the elastic band. This is your filtration column. Now take the third bottle and cut off the top 10cm to make a cylinder, and remove the label. Turn the filtration column bottle upside down and stand it in the cylinder bottle.

5. One person will need to hold the water filtration column and the collecting cylinder carefully so that they do not fall over as you add the materials. Place 480ml of activated charcoal into the water filtration column (this layer will fill the neck and shoulders of the bottle).

6. Place 480ml of sand into the water filtration column as the next layer.

7. Place 480ml of gravel into the water filtration column as the final layer.

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

MAKE A BASIC WATER FILTER

WORKSHEET

8. With one person still holding the bottles carefully, pour 750ml of tap water onto the gravel layer so the water passes through the column and cleans out any small particles of dirt and charcoal. Discard the water that drains into the collecting cylinder.

9. Shake up the impure water from step 2 and, with one person carefully holding the bottles, slowly pour 750ml of the impure water onto the gravel layer. Observe the water as it passes through the filter. Place a sheet of white paper under the collecting cylinder. Observe and record the properties of the filtered water. Measure and record the pH. Compare its appearance with the impure water left in the bottle from step 2. Measure how much filtered water was collected. Is the same volume that you placed into the filter?

Questions

1. Which impurities did the water filtration column remove? Which were left behind? How could you tell?

2. What are some of the drawbacks of this method? Suggest some ways that the filtration column could be improved.

3. Would this type of filter remove harmful bacteria from water? What processes remove harmful bacteria from water?

4. How many litres of water do you think could be purified with this column? Explain your answer. How could you test the column to find out?

5. Some participants in a camping group are taught to dig a hole in the ground next to a stream if they are in the wilderness without a means to filter water. How would this method work?

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

THE LIFE OF A YELLOW BELLY

TEACHER'S NOTES

THE LIFE OF A YELLOW BELLY

Session aims:

To teach the processes involved in making charcoal in the 16th century and what life would be like for a charcoal burner and his family.

This is a fictional story based in Tudor England in the 16th Century. Some of the names are real people who in the past shaped the landscape of Brede High Woods. You can read the story with the class and use the glossary of terms and websites listed to explain and demonstrate the processes involved in charcoal burning. Using their own copy of the story and pictures from the internet, the children will then draw a storyboard/cartoon strip illustrating how this story could be used as a script for a new My High Weald film, like those in the learning zone on the High Weald AONB website – www.highweald.org Tell the pupils to imagine they are giving their storyboard and the script to the cameraman before the first day of filming.

Glossary of terms

Charcoal Burner's huts were simple structures and often did not keep out the heavy rains. They were placed with the door facing the kiln to make it warm inside;. Sometimes the cooking fires were lit on the opposite side to add more heat. Some families were nomadic and moved from wood to wood offering their skills and labour. Some like Jack's remained in the woods and preferred their warm huts to a more permanent yet cold stone house. Such families were able to employ some seasonal labour to help them.

Rushlights – are an ancient form of lighting made from the partially peeled pith of a rush dipped in melted animal fat. You can make your own using the poor man's candle activity.

Coppicing had been practiced since Saxon times, and woodland laws were introduced and strictly enforced by the Normans. The increased demand for iron for cannon put much more pressure on the woodlands. King Henry VIII passed laws to protect future timber supplies.

Kiln – the name for the mound when the wood is stacked and covered over for burning to make charcoal.

Pitstead – is the site where the kiln is built and the charcoal is made. It is also called a platform or hearth.

Ashburner and Collier – are common family surnames for charcoal burners and can still be seen in place names today, eg Ashburnham and Colliers Green.

Iron Master – John Browne was the actual manager of Brede Furnace and Gun Master to the King before and during the Civil War 1642-1653. The furnace actually belonged to the Sackville family of Knole House in Sevenoaks Kent, which is now a National Trust Property.

The law and punishment regarding poor charcoal quality was introduced in 1368. It is not clear whether this statute was ever abolished.

Pillory – similar to the stocks and often confused with them, the pillory was a worse punishment as the head, hands and sometimes ankles were held by either wooden or iron clamps, resulting that the offender had to stand or kneel for hours at the mercy of the local people who threw things at him/her in ridicule. As their hands were clamped, they could not defend themselves. The stocks only clamp the feet so the offender was seated, which was less torture as they could shield themselves when items were thrown.

THE LIFE OF A YELLOW BELLY

TEACHER'S NOTES

Charcoal was also required as an ingredient for gunpowder. This took place as early as 1346 where superior weaponry in the form of guns enabled the English to defeat the French in the battle of Crecy, part of the One Hundred Years War. For gunpowder production the wood was best if it was willow, alder or alder buckthorn. The wood had to be cleaned of all bark and carefully checked by hand after burning to check that no grit was passed to the powder mills. The furnace for iron at Brede was converted into a powder mill in 1769.

You can use the following websites with images of charcoal burning to show the pupils.

The Museum of English Rural Life – click on the 'choose an option' link for charcoal burning and you can see a slide show of images.

www.reading.ac.uk/merl/interface/advanced/countryside/ruralind/ruralind_charcoal_burning.html

The Weald and Downland Museum – image of a charcoal burner's hut that they have recreated.

www.wealddown.co.uk/Buildings%20and%20Exhibits/charcoal-burning.htm

Images and illustrations of charcoal burning

www.openairclassroom.org.uk/Further%20information/information-charcoal%20burning.htm

UK agriculture shows a timeline of charcoal production

www.ukagriculture.com/countryside/charcoal_history.cfm

Pound Wood shows a step-by-step process of charcoal production using a more modern 1920s metal cylinder

www.poundwood.org.uk/Charcoal/Charcoal.htm

Lincolnshire Wildlife Trust shows some modern photos of charcoal burning

www.lincstrust.org.uk/conservation/article.php?id=3

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

THE LIFE OF A YELLOW BELLY

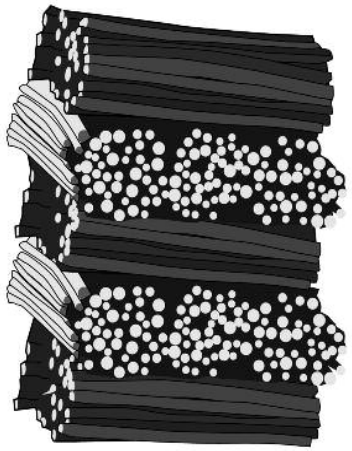
WORKSHEET 1 OF 1

My name is Jack. I am 12 years old and the eldest son of Tom the Charcoal Burner in Brede High Woods. I have lived here all my life with my parents and younger sisters. We live in a cone-shaped hut made from long poles and twigs leaned and tied together at the top and covered with turf. It is small inside, but its warm and besides we don't need much room as we spend all day at the pitstead or in the wood. When it is dark we watch the kiln or rest and sleep. We cannot do much more by the dim light of the cooking fire or a rush light.

Now that I am old enough my father is teaching me how to make charcoal, like his father told him when he was young. It is hard work, a man's work, much more tiring than collecting and chopping wood for the cooking fire for my mother.

In the winter months, when the sap is low we cut the trees. We must cut them close to the ground so they can grow back. We only cut each tree once every 10-15 years so that we always have a supply of wood. My father says this is called coppicing. Grandfather tells us stories of before, when the men cut down too many trees. The people became worried about there being no wood left to make charcoal or furniture or for shipbuilding, and no acorns to feed the pigs on. I'm glad people decided to coppice as the woods would not be the same without trees, and there would be nowhere for us to work or live.

When the wood is cut and split into lengths, it is stacked to dry for at least half a year. The burning takes place in the summer time, and we have used the pitsteads here for several years. My father chose them because the soil is light, it drains well and the surface is level. Also there are no animal burrows. When the wood is dried, we stack it to make a chimney, then the rest of the wood is carefully stacked close together in layers round the chimney to make a mound shaped kiln. It must be stacked stably so that it doesn't collapse as it burns. Then we cover the mound with litter from trees or bracken or grass, and then fine earth is spread evenly over the top leaving the bottom clear for the air to get in. While father covers where I cannot reach, I make a fire of scrap wood and charcoal and, when this has burnt to glowing embers, father shovels it up and puts it down the chimney.



We leave the chimney open for 3 or 4 hours to make sure the wood is alight, and then we cover over the chimney and the bottom with turf. We make some small holes below the chimney and then lower still, gradually working down the kiln to draw the fire outwards. Each time we make new holes, we cover the higher old ones. At first the smoke is white as the water burns out of the wood, then it turns yellow as the tar burns from the wood. Father disagrees, but we all say he is turning yellow on his belly from the smoke, when he works without his shirt on! I suppose I will turn yellow too one day soon! Finally the smoke turns a hazy blue colour, as the wood becomes charcoal.

THE LIFE OF A YELLOW BELLY

As the kiln burns it sinks down and we repair the holes and cracks, because if too much air gets inside it will burn away completely. We have to keep a close eye on the kiln until it is ready because if it becomes a bonfire then all our hard work is undone and we get no money. We have a special stool, with one leg, so if we nod off in the night we fall off and wake up, I've done that lots of times, it's hard to stay awake so long.

By the end, the mound is much smaller. We remove a few small areas of earth and pour into each hole two or three buckets of water from the gill stream,. Then we cover the whole kiln in more earth to stop the air getting inside, this puts out the fire. Grandfather once told us of the Ashburner family who were in such a hurry to take the charcoal to sell, that they didn't use enough water and when the charcoal was loaded up on the wagon it set the whole thing on fire! I bet that made Mr Ashburner more grumpy than usual and probably scared his horse too!

After putting the water in, the kiln should be left to cool for a whole day, before it is opened up and the charcoal is raked out. We keep woven wooden windbreaks up around the edge of the pitstead to stop gusts of wind from re-kindling the fire. One of the jobs for my mother and sisters is to make sure the pitstead is clear of any pieces of wood or material that might catch fire as the charcoal is raked.

Finally the charcoal is shovelled into bags, loaded on the wagon and taken to the furnace to sell to John Browne the Ironmaster.

My Grandfather told me of a collier many years ago, he was caught selling sacks less than one quarter in weight, he was put upon the pillory and the sacks were burned beneath him. Well I guess you could say it certainly served as a good warning to other colliers as the story is still told today!

I am glad we don't have to travel far to sell our charcoal, we can follow the old track I used to play along, and it also goes to the farm where we get some of our food. It is very rutted from the cartwheels and animal hooves, so it is a very bumpy ride on the wagon and hard going for horse or human trudging through the muddy clay. The track is very sunken where it has been used for many years. I used to have fun scrambling up the steep sides and sliding back down.

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

THE LIFE OF A YELLOW BELLY

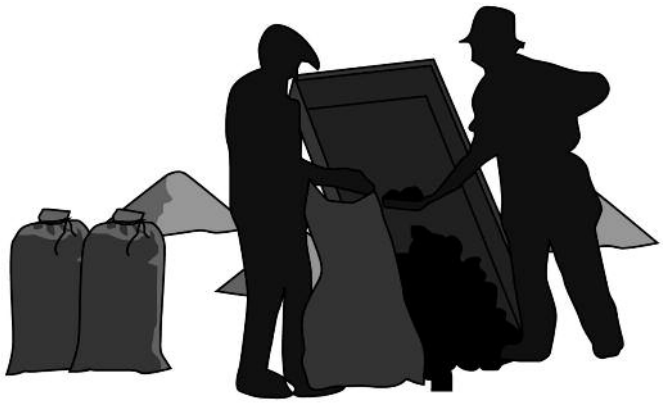
WORKSHEET 1 OF 1 continued

You may think the life of a charcoal burner is very tough, and you would be right. It is hard work and can be very lonely at times.

But I don't really know any different and I enjoy knowing and understanding every part of the woodland world around me.
It is much better than working at the furnace where it is loud and really hot. I expect in six years or so I shall marry a local girl from another collier family, as she will understand the life we will live.

STORYBOARD

You have been asked to make Jack's story into a short educational film. You will need to put together a storyboard of pictures that the cameraman will need to film using the story as a script. Re-read the story of Jack and use the pictures of charcoal burning on the internet to help you. Fold a piece of A4 paper in half three times to make eight rectangles, unfold the paper and use a ruler to draw lines along the folds. Number and use each of these boxes to draw the scenes for your film. You can use more than eight scenes.



Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

HEARTHS, CHIMNEYS AND KILNS

TEACHER'S NOTES

HEARTHS, CHIMNEYS AND KILNS

Session aims:

To teach about archaeology and looking for evidence from past industries and to reinforce the processes involved in charcoal burning in the woodland surroundings using role-play.

Much of the woodland at Brede High Woods is ancient, which means that the land here has been wooded for at least four hundred years. Because the woodland has never been cut down and the land use changed since the 1600s, we can often find evidence for previous human activity within the woodland. Archaeological evidence of charcoal pitsteads or hearths are hard to find as there is little left behind once the charcoal burner has left. You can use the map to find some of the more accessible charcoal hearths that have been found so far in Brede High Woods. All you will see today is a very flat area approximately 4-5 metres in diameter; if the ground is sloping you may see a wall to build up the ground level. The soil will be much darker especially around the edge where the charcoal was raked out and bagged up. The hearths found in Rafters and Horn's Wood off of the reservoir road are visible from the path which was the access route for the charcoal burners. The hearths are evenly spaced through the wood and interestingly they are often found near old saw pits. For the next activity, you can either use one of the old charcoal hearths or find a suitable site depending on where you are in the woods.

You will need

Some printed pictures of past charcoal burners and their huts for reference.

MAKE A HUMAN CHARCOAL KILN

Spilt the class in half if it is a large group and ask the pupils to find an area that is flat, approximately five metres in diameter, with no rabbit holes or trees. You may only find one place that fits this description. Explain to the pupils about the difficulty of finding archaeological evidence of old charcoal hearths.

The children are now going to re-create one or two charcoal kilns using their bodies.

Chose three children to be the central chimney. Ask them to stand in the middle with their arms around each other's shoulders.

Now ask five children to kneel at the bottom of the chimney with their arms up towards the chimney, these are the first pieces of stacked wood.

Next, ask eight children to stand in a circle around the chimney and wood. Ask them to step one pace back and lean in with their arms above their heads to make a dome shape.

This is your finished charcoal kiln. Remind the children that the charcoal burner will now cover the stack with leaf litter and soil. Next, he will add embers from a scrap wood fire, Ask the children to make a crackle and hiss sound of the wood catching fire and then the puffing sounds of smoke rising. The charcoal burner will then block off the chimney. Ask the middle children to tuck in their heads.

As the wood burns, ask the children to slowly sink down towards the ground until everyone is kneeling. Then ask the teaching assistants to pretend to pour the water in and the pupils to make hissing sounds of the cold water on the hot embers.

When the charcoal is cooled (the hissing has stopped), ask the teaching assistants to pretend to rake out the charcoal and the pupils will spread out on the ground making raking, scraping sounds as the teachers move between them.

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

HEARTHS, CHIMNEYS AND KILNS

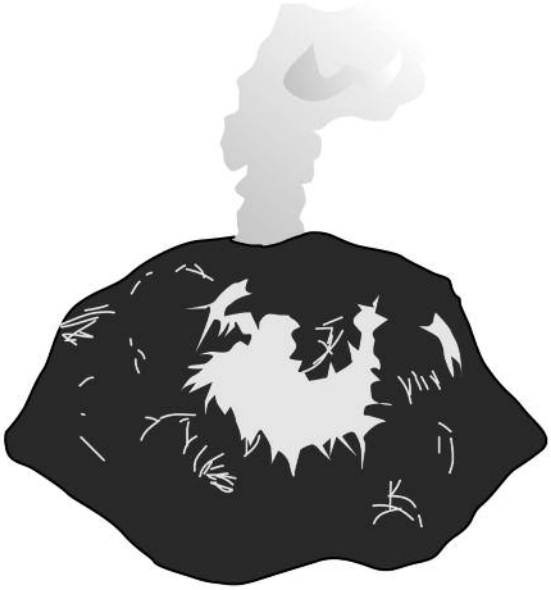
TEACHER'S NOTES

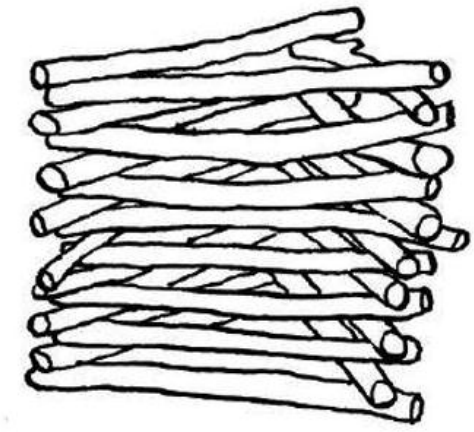
MEMORY SCULPTURES

Session aims:

To teach the pupils how much work was involved in charcoal burning before the kiln is even lit and to appreciate the art within this traditional craft.

Remind the pupils how it is important to control the amount of air let in to the charcoal kiln. Ask them what would happen to the wood if too much air gets inside. Now working in pairs, ask the pupils to collect small twigs of dead wood from the ground only. They will need to collect at least 21 pieces all about the length of their hand from wrist to finger tip, and about as thick as their thumb. They can snap longer twigs into smaller lengths. Then ask them to find a nice place to stack the pieces in a triangle towe,r as illustrated. The pieces of wood are called cords, and this stack is the start of the kiln where the embers from the scrap fire are put to light the fire. Once their stack is finished, ask them to leave it in the woods as a memory sculpture for the charcoal burners of old.
Ask them to share with their partner, what the wildlife in the woods might think of these sculptures.





Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

HUTS AND SHELTERS

TEACHER'S NOTES

HUTS AND SHELTERS

Session aims:

This is a hands-on teamwork activity to encourage the pupils to appreciate what it must have been like to live in the huts in the woods, and the problems that may have been encountered.

It may be advisable for the children to wear gloves, depending on their age, although it is more fun for them to get their hands dirty!

You may wish to have a few pairs of secateurs to hand – if so, remember to risk assess for use of hand tools.

If you wish to make the rush lights back at school then you will need to collect the rushes too, you will find them near to water and in boggy areas.

Soft rush

Debris shelter design

Remind the children that many charcoal burners would live on site in a hut. Ask the pupils if they can remember from the story of the life of a yellow belly what the huts were made from and how they were built? Use a printed picture from the Wealden Downland website to remind them.

Split the class into groups of approximately five, or let them chose groups. Try to have an adult in each or between two groups. Each group is going to make a woodland den; it can be of any design, like the charcoal huts or a woodland debris shelter.

What you will need:

Printed picture of charcoal burner's hut and debris shelter from the internet.
Gloves
Secateurs
Rushes

You can give the groups a time limit depending on your schedule. This activity can be easily extended if you ask them to cover the den sides with leaf or bracken litter. Or shortened, if you do not specify the size of the den being big enough for a person/group.

Safety points:

Remind them to stay within sight of their adult. For younger children, divide the pupils into wood collectors and den builders and tell them when to swap. They are to only use dead wood, and not to snap off live trees. They must be aware of leaning live and dead trees and must not shake tree branches. They must also be careful when carrying wood, and ask a team member to help them and be aware of where other people are when they have long lengths. If covering the dens with bracken, then please use secateurs to cut them even when the plants are dying back unless the pupils are wearing gloves, as the plant stems are strong and can tear soft hands when pulled.

At the end, ask the children to take it in turns to go inside their shelter. Then bring the class back together and discuss the advantages and disadvantages of living in a hut for the charcoal burner and his family.

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

SKETCHING MEMORIES

TEACHER'S NOTES

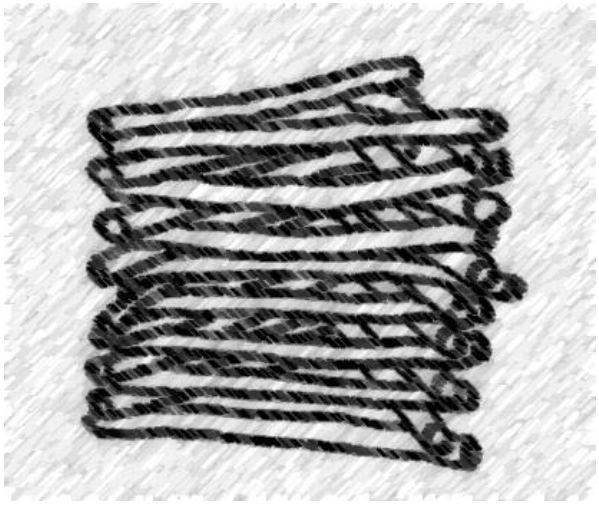
Session aims:

To reflect upon the days activities and appreciate the beautiful woodlands and the wildlife within them.

Ask the pupils to find a quiet spot to collect their thoughts and using a piece of paper and charcoal pencils ask them to sketch their surroundings. Ask them to think about how the woods would have looked when the charcoal burners were there, and how it looks today. They can sketch their dens and pictures of the activities they have done. They will need to refer to these sketches to help them to write a poem for the recipe for charcoal activity when they get back to school. They can also use the sketches to decorate their poems.

What you will need:

Clipboards
Charcoal pencils
Paper



Brede High Woods

Educational Resources

RECIPE FOR CHARCOAL

TEACHER'S NOTES

Session aims:

To reinforce what has previously been learnt about charcoal burning and the people who worked in the industry. Encourage the pupils to think about the thoughts and feelings of the people, the processes involved, and the problems and triumphs encountered.

Using the resources from the pre-visit activities, and the sketches the pupils have made during their visit to Brede High Woods, ask them to write a poem or piece about charcoal burning and decorate it using charcoal drawings. This could be in the form of a recipe with ingredients and instructions as the wood is baked rather like a cake. Or perhaps a poem about the life of a Yellow Belly. Ask them to think about the woods and how the charcoal burner might feel as he worked each day. Before they begin read them the following poem by A.A. Milne, a writer famous for his Winnie the Pooh stories based in the local Ashdown Forest.

The charcoal burner has tales to tell.
He lives in the forest, alone in the forest,
He sits in the forest, alone in the forest,
And rabbits come up and they give him good morning,
And rabbits come up and say, 'Beautiful morning',
And the moon swings clear of the tall black trees,
And owls fly over and wish him good night.
Quietly over to wish him good night

A.A Milne, Now we are six, 1927

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
Post-visit activity

HISTORY BOARD GAME

TEACHER'S NOTES

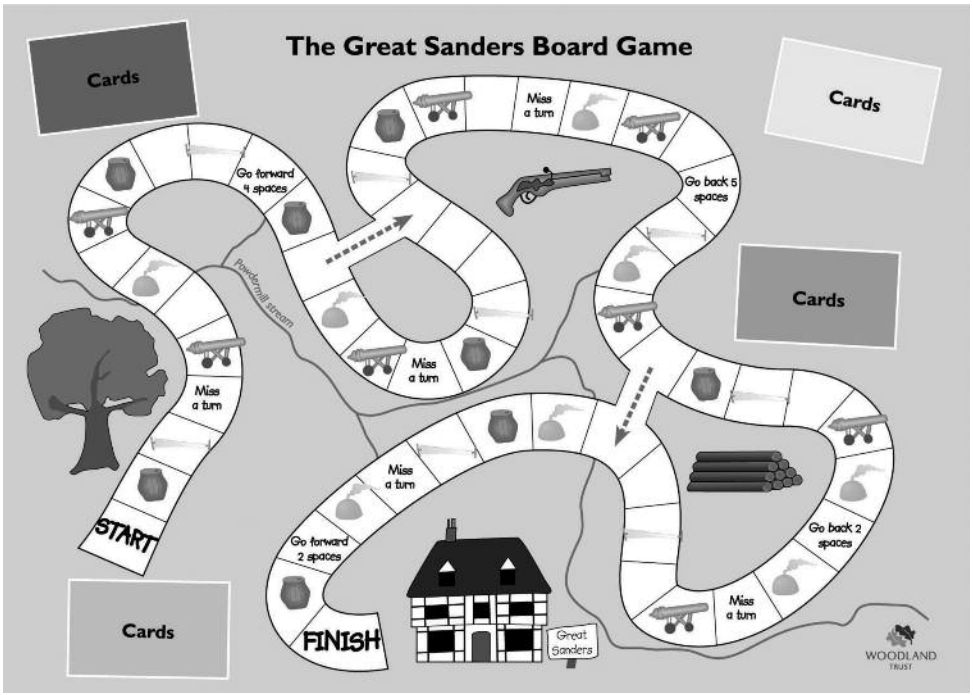
Session aims:

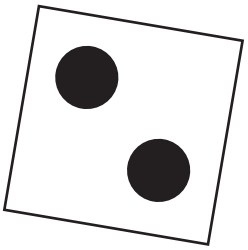
To teach in a fun and unusual way the broad and hidden history of Brede High Woods, reminding the pupils of the positive and negative things that have happened there in the past.

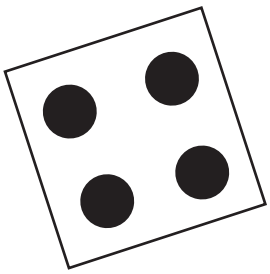
This educational board game covers the history and happenings of Brede High Woods, it includes the charcoal burner, wood sawyer, iron and powdermill industries. So it is best played after the units on coppicing, saw pits and the iron industry have been covered. The pupils may colour in the board game and add their own pictures.

What you will need for each group:

To download and print off the board game, rules and fact cards
Cut out the fact cards
Counters
Dice







Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
▶ Post-visit activity

MAKING RUSH LIGHTS

TEACHER'S NOTES

Session aims:

To teach the children how much more difficult the simple aspects of life once were, and to encourage them to not take for granted the modern luxuries, such as smell-free lighting at the flick of a switch, but to consider the environmental costs of our modern technology.

Rushlights are an ancient form of lighting. They were made from the partially peeled pith of a rush dipped in melted animal fat. It is thought that rushlights have been used since before the Romans arrived in Britain. At first everyone used them, but by the Middle Ages, the rich began to use candles. Rushlights were free if you made you own, or very cheap to buy, unlike other candles, which from 1709-1831 were taxed, making them too expensive for the poor and working class people to buy.

When they have made their lights, encourage the pupils to think about how easy it is to have lights today and how life by rush light would have been very different and difficult. Remind them of how we need to save electricity to help look after the environment and not waste our resources by switching off lights when they are not needed.

What you will need:

- Some adult helpers
- Some green rushes, cut close to the ground (these are best cut in the autumn, you can soak the rushes in water until you are ready to use them) (if you can't find rushes then use straw)
- A 30cm ruler
- 3 lengths of string
- Pieces of animal fat – (sheep fat is best from the butcher as it dries the hardest)
- A saucepan
- A long narrow tin for dipping
- Tweezers
- A bulldog clip
- A milk bottle
- Matches

The Woodland Trust is the UK's leading woodland conservation charity dedicated to the protection of our native woodland heritage. **woodlandtrust.org.uk** 4070 10/09

heritage lottery fund
LOTTERY FUNDED

WOODLAND TRUST

Brede High Woods

Educational Resources

Pre-visit activity
On-site activity
▶ Post-visit activity

MAKING RUSH LIGHTS

TEACHER'S NOTES

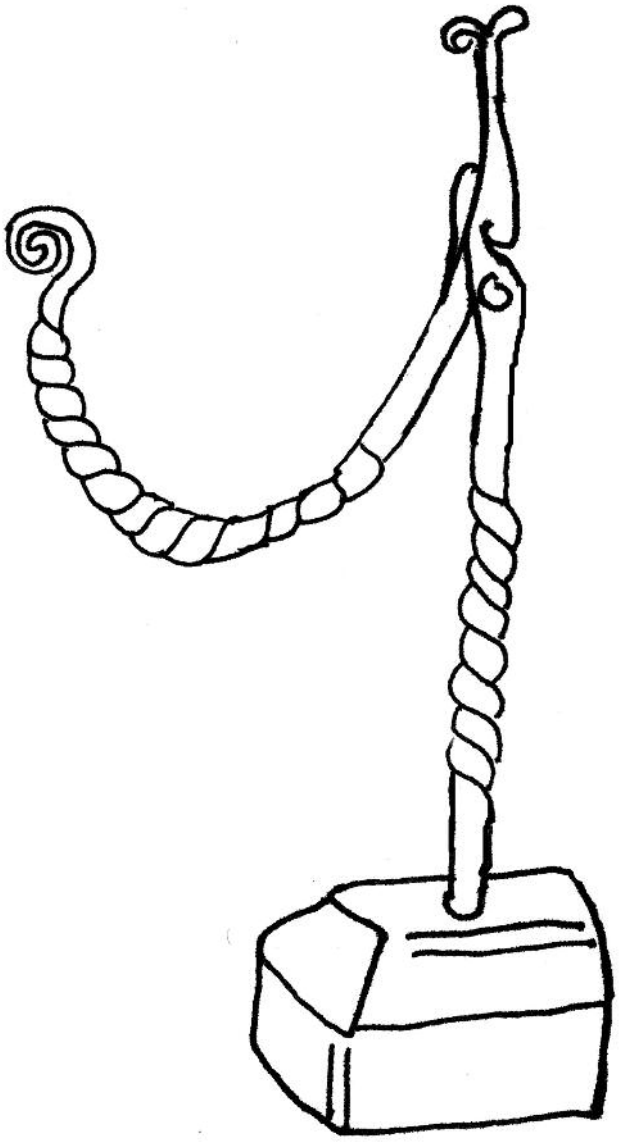
You must take care in this activity, as there are hot materials.

1. Cut off the bottom 20cm of the rush and put it to one side. Practice on the rest of the rush, using your fingernails peel off the green skin leaving one strip all the way along the length. Then do it for real on the 20cm you have saved. Leave the pith to dry somewhere warm; it will curl as it dries so gently tie it to a 30cm ruler in three places to keep it straight.

2. Ask an adult to melt the fat gently in a saucepan and pour the melted fat into the tin. Using the tweezers hold a peeled rush in the fat for 30 seconds. Take the rush out and allow it to cool and the fat to harden.

3. For a simple holder once the fat is dry, clip it to a bulldog clip at a slight angle and balance it in the top of a milk bottle. Ask an adult to light one end of the rushlight. How long does the rushlight last? Do you like the smell of domestic lighting from the past?

A variety of holders were used to take rushlights. The simplest was a split stick, the rushlight being placed at an angle and moved forward as it burns near the wood. More elaborate holders were made from wood and iron.



The Woodland Trust is the UK's leading woodland conservation charity dedicated to the protection of our native woodland heritage. **woodlandtrust.org.uk** 4070 10/09

heritage lottery fund
LOTTERY FUNDED

WOODLAND TRUST