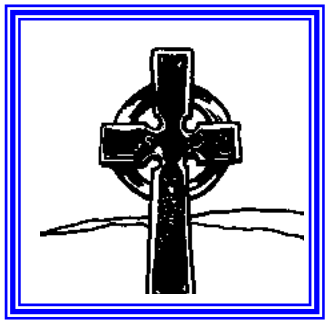
Durham Heritage Coast Education Pack

Section 2 Activity Programmes



KS1
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will understand how archaeological finds help people find out how people lived in different time periods. They will also understand that certain finds are found in some time periods and not others.

Activities

1. The teacher should make laminated cards with pictures of archaeological finds on them from the different time periods listed in key concepts 1.1. There should be at least six different cards for each time period. A search of the internet may find suppliers of such finds for educational purposes.

Get seven large deep boxes and fill them with sand. Bury the cards in the boxes making sure you put the right finds in the right time period box.

2. Give the pupils some small trowels and brushes and split them into 7 groups and assign them to a box but don't tell them which time period it is. They should pretend to be archaeologists and 'dig up the finds. When they have found all the finds in a box bring the class together and discuss what they have found.From the finds discuss what life might have been like at those times, what people ate and wore, where they lived etc.

3. Make up some flour dough clay or use pre-made clay which can be baked in a normal oven. Make several clay sausages and 1 flat circular base. Wrap the clay sausages round the edge of the base, building them up in layers.

Make sure the sausages stick together firmly and when the bowl is the size wanted smooth the sides before baking. These are the type of bowls Mesolithic and Neolithic people would have made.

4. Hold a prehistoric picnic using the bowls you made and talk about what prehistoric people would have eaten and what they would have worn. Where nearby might they have found all they needed and made a settlement?

Are there any clues you can see which say prehistoric people lived in your area? If not why not?

What would you miss if you were suddenly transported back in time 4,000 years.

5. Time Parachutes

Get a large parachute and place the pupils evenly around it, holding the 'chute tight with both hands at waist height. Go round the 'chute giving each pupil the name of a time period such as Neolithic, Roman, Viking, Medieval etc. (see Key Concepts Section 1.1). Make sure there are at least two pupils for each period.

When you call out a time period the pupils have to balloon the ‘chute and those with that time have to run under the chute and swap over. They need to get back to the chute edge before it comes down.

You can repeat the game as many times as you like or make it a bit more difficult by calling out two time periods at once so double the amount of people have to swap over.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will have an appreciation of the ways of life of people in different time periods. They will also know the names of the different time periods and their chronological order.

Pre-visit Activities

1. Do book and internet research about Medieval times looking at house styles, farming methods and what churches were like.

2. Draw a picture of a Medieval castle or a settlement scene of their choice. Turn the picture into a stained glass window using tissue paper and black pen for the lead outlines. This window can then be taken onthe visit as well as a 1m ruler.

Visit

St Mary’s Church area

1. Go to St Mary’s Church and look for clues as to how old it is, things such as any dates on it, its shape and size and any information boards. Using the ruler measure how long and wide the church is and then guess how high the tower is. Look at the windows and count how many there are. Compare the windows they made with the actual ones.

Discuss how difficult it would have been to build the church and make the windows in the days without JCB’s etc.

2. Stand with your back to the church and look towards the sea. Why do you think a church was built here? What do you think the area looked like in the 7th century when the church was first built? How is it different today? What was life like at the time the church was built?

Where did the workers live and what were their houses like. Did the children go to school?

3. Look at the graveyard and try to answer the following questions:

Which is the oldest gravestone and which is the most recent?

Work out how many years between the oldest and most recent graves.

Is the oldest grave older or more recent than the church?

If younger why aren’t there any older graves?

Why did the monks build the church here?

4. If possible try and get permission to go into the church to see inside. You could possibly do some brass rubbings as well as look at the internal structure. Other Medieval churches might let you in so ask around.

Post-visit Activities

1. Write a short story about the building of St Mary’s church. They could pretend to be one of the workers describing what they did and what they used and how they lived.

2. Get the grave stone information and group people who died in the same year. Make a graph of how many died each year and see if there was a particularly bad year. Where do you think any older graves might be?

3. Look at the town you live in and see if you can deduce how old the place is and what evidence there is to help them.

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will understand that different archaeological finds represent different time periods and how they show us how people lived in those times. They will also understand the principle of continuous occupation and how place names can often be clues as to their origins.

Activities

1. Make up some archaeological finds cards as described in KS1 Activity Programme 1. Instead of putting them into different boxes of sand, make up a single giant box. Place the oldest finds at the bottom then add a layer of sand about 10cm deep. Add the next series of finds and sand on top. Keep doing this till all the finds are in sequential layers and there is a final layer of sand on the top.

The pupils then 'dig up' the finds in turn and see which came first etc. Discuss why similar finds were found in the same layer etc. This demonstrates continuous occupation.

2. Collect stones of different shapes and sizes, and smooth and rough. These are the sort of things prehistoric people used as tools. See which are best for trying to cut cloth or wood and mash wheat and vegetables. How easy or difficult are they to use and suggest ways to change them to make them better tools such as making them sharper, tie them to a handle etc.

3. Get the pupils to research the meanings of Anglo-Saxon and Viking name endings.

4. Look at a map of County Durham and identify place names with Anglo Saxon or Viking endings. Translate the names and put the translation on a flag on the map eg. Seaham – homestead by the sea.

5. Make up your own Anglo Saxon/Viking place name by taking your surname and adding an ending of your choice such as a homestead, family group, village etc. (see Key Concept 2).

6. Get a large parachute and place the pupils evenly around it, holding the 'chute tight with both hands at waist height. Go round the 'chute giving each pupil an Anglo Saxon or Viking place ending (see Key Concept 2), making sure there are an even number of each name.

Call out the modern translation of one of the words e.g. farmstead and those with the Old English version e.g. ton, have to dash under the ballooning 'chute and swap over before the chute falls.

7. Pretend you are a Neolithic stone monument set on a hill near where you live. Write about the changes you have seen while you have been standing there. Pick one of the time periods you have written about and arrange yourselves into a human time line starting at the ice-age and ending at the end of the Georgian period. Read out one sentence from your time period.

8. Find a picture of something of interest in the area which is Victorian in age such as a church or station. One third of the class should make a cave style painting of the picture, one third a Roman style mosaic of the picture and the last third make a Medieval stained glass window.

KS2
Activity Programme 2

Learning Outcomes

By the end of this activity the children will understand the structure of Medieval churches and the importance of Christianity in Medieval times.

Pre-visit Activities

1. Research the start of Christianity in Britain.

2. Research the different parts of a church including nave, vestry and tower.

Visit

St Mary's Church Seaham

1. Go to St Mary's Church. Get into pairs and measure the length and width of the church and how tall the tower is using just a metre ruler and themselves.

This is done by one person standing against the tower and the other holding the ruler at arms length. The person with the ruler moves back until the bottom end of the ruler looks as though it is touching the ground and the top is level with the other persons head. Measure how many rulers high the tower is. Next measure the actual height of the person and times it by the number of ruler lengths. This is a rough guide to the height of the tower.

2. What is the church made of?

Using a compass, find which is the North wall. Look at the windows. What shape are they?

Look at either side of the vestry, are the bricks in straight rows or in a herring bone pattern? If they are straight then the vestry is from the Norman times but if it is herring bone then it is from the 7th century before the Vik

What is the roof made of? What do you think it was made of when it was built? Does the east end of the church look the same as the rest of it? If not is it older or younger than the rest?

Where do you think the people who went to the church lived? Was it a large town or a small village?

Why was a church built here? Do you think any monks lived in the area? If yes where do you think the monastery could have been?

What do you think happened to the church and monastery when the pagan Vikings came?

3. Other good churches to visit if possible are St Andrew's in Dalton-le-Dale and St Mary's at Easington.

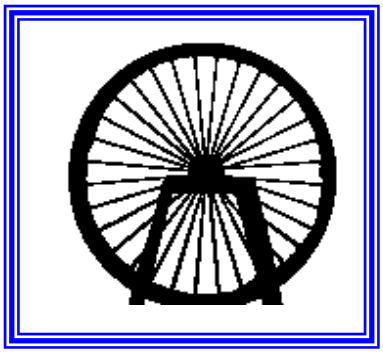
St Andrew's is a different shape to St Mary's Seaham and has a bellcote. Is it older or younger than St Mary's Seaham? It is also near to a Medieval pele tower which is also worth a visit. What do you think the tower was used for?

St Mary's Easington is younger than the one at Seaham but similar in style. It is very near to Seaton Holme. Who do you think lived there in such a fine building?

Post-visit Activities

1. Make a scale model of the church using cardboard boxes and recycled materials. You could also make a stained glass window using tissue paper to put at a key point on the church.

2. Research what life was like in a Medieval monastery. Pretend to be a new monk at Seaham Monastery and write a story about a week in your life there. You could include the coming of the Vikings in the story.



KS1
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will understand what it was like for children living in the area during the coal mining period.

Activities

1. Look at a map from about 1900 and see if you can find the pits and railways. Is there a connection between the pits and the railways and where the towns are?

2. Research what it was like for children of your age in the 1850's.

Did they go to school?
What did they eat and where did they live?
Where did they work?
What games did they play?

3. Pit children role play
Move the tables or desks in the classroom so they are end to end forming a narrow tunnel round the classroom. You can have some tables branching off the main tunnel and some should end up against a wall. If possible cover the tables with sheets to make them more enclosed and dark. The tables represent the mine tunnels and the wall the coal face.

Try and move around in the tunnels dragging your school bags behind you like coal buckets. Get one or two pupils to sit at table junctions and pretend to open and shut the trap doors to let others through and air into the pit and some can be at the coal face digging the coal out.

Do this for about 15 minutes and then describe what it was like in the 'mine'.

4. Pretend you are a child working in the pit and write a diary entry about a day down the pit.

5. Interview your grand-parents and ask them what they did when they were your age. Ask them the same questions as above and compare their answers with your research.

How does your life today differ from your grandparents and children of the 1850's?

6. Colliery Parachutes
Get a large parachute and place the pupils evenly around it, holding the 'chute tight with both hands at waist height. Go round the 'chute giving each pupil the name of a colliery. Make sure there are at least two pupils for each colliery.

Tell the pupils that when you call out a colliery they have to balloon the chute and those with that time have to run under the 'chute and swap over. They need to get back to the 'chute edge before it comes down.

You can repeat as many times as you like or make it a bit more difficult by calling out two ‘collieries at once so double the amount of people have to swap over.

7. To really get the feel of what life was like in the 1850’s try and visit Beamish Museum where you can go into houses, schools and mines of the time.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will be able to recognise buildings from the industrial period. They will also understand how difficult it was to get coal from the ground.

Pre-visit Activities

Incline Test

This looks at how the steeper the incline the faster something goes down it but also the heavier it is as well.

Get the tube from the inside of a kitchen roll and cut it in half lengthwise so you end up with two chutes. Stick the two chutes together using sticky tape to make one long chute. Put one end of the tube on the floor and raise the other end by supporting it on two or three books to make a slope, don’t make the slope too steep.

Get a small model car and let it run down the slope. Count how many seconds it takes to get to the bottom. Add another book to make the incline steeper and try again. Do this till the tube is nearly vertical. What happens to the speed of the car going down as you make the chute steeper?

Add some modelling clay to the car to make it heavier, does it go down the slope quicker or slower? Try adding more and more weight and see what happens.

How do you get the car back to the top?

Visit

Seaham Hall and Vane Tempest

1. Go along and look at Seaham Hall and Londonderry stations.

Do they look similar or different?
What were they used for?
What are they used for now?

2. Go to the Vane Tempest interpretation sign.With your backs to the sea, look at the picture of the old colliery, can you see any evidence of the Vane Tempest pit? What is there now?

3. Look at the interpretation sign and see if you can find what the miners called their lunch break and what they ate.

4. For an additional visit you could go to Cold Hesledon to look at the Victorian pumping station. Or go to the Sunderland Museum to see their Coal Exhibition.

Post-visit Activities

Winding engine

This demonstrates a method of winding objects up a slope.

Tie a piece of string to the back of the model car used in the incline test. Put a cotton reel onto a pencil so it turns easily and stick the other end of the string to the cotton reel and wind it up, raising the car as you do so.

Put the car at the top of the chute and hold the pencil and let go of the car. The car will go down the slope to the bottom. To raise the car turn the cotton reel so the string winds round it and the car rises again.

This method was used in coal mines and on some steep railways.

Make up a pit song that miners could sing whilst at the coal face.

KS2
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will understand the basics of steam engines and how important they and the railways were for the coal mining industry.

Activities

1. Gravity Machine

This model demonstrates a more efficient way of moving heavy loads up and down an incline than the simple winding mechanism shown in the KS1 activity. As two wagons can be moved at the same time.

Get a large piece of stiff card to act as the incline. Rest one edge on the floor and prop the opposite edge on a small pile of books so the card is on a slant. Get two identical model trucks, or make them from building blocks, and a piece of string the same length as the piece of card. Tie one end of the string to the back of one truck and the other end to the back of the other truck.

Put a cotton reel onto a pencil and secure it with modelling clay so it doesn't spin on the pencil. Drape the string over the cotton reel so the trucks are at the same level. Rest the pencil on the top edge of the card at right angles to it so the trucks rest on the card. The trucks should stay where they are as long as they weigh the same.

Add some weight to one of the trucks and see what happens. The weighted truck should move down the slope raising the other one as it goes. When it reaches the bottom put a similar load into the top truck and remove the load from the bottom one, watch what happens.

What happens if you put a small load into the bottom truck and a heavy one into the top one? This method was used to get coal from high pits down to Seaham harbour and also get necessary equipment from the harbour, such as wood, to the pits.

2. Beam Steam Engine

This is a simple model of how a steam beam engine works.

Get a toothpaste carton and push a pencil right through the long narrow sides so the pencil is horizontal and the box spins freely on it. Tape a bendy straw to one end of the box making sure the end of the bendy bit is at the bottom edge of the box, with the long part of the straw hanging down. Put a card board disc on the end of one of the straws and tape into place. This acts as the valve for the steam to push.

Hold the pencil with the toothpaste box horizontal. Push the straw up gently. What happens to the toothpaste box? Pull the straw down. What happens now? In a steam engine it is the steam which pushes up the beam etc.

What sort of things could go on the other end of the beam?

3. See if you can come up with a way of combining the beam engine with the gravity machine. A tandem gravity winding engine like this was used on the South Hetton railway.

4. Look at a map of the area from the early 1900's. Put on it all the pits and railways. Is there a connection between where the railways go and the pits? If yes why?

5. Make up a train rhythm song about steam trains. Form a conga and sing the song as you snake round the classroom.

2.3 Geology and the Landscape

KS2 only

Learning Outcomes

After this activity programme pupils will understand how rock is formed, some of the processes involved and how these processes have helped form our landscape.

1. Make the rock sandwich of all time

Make a multi-layered sandwich to demonstrate the layers of rock that lie beneath our feet on the Heritage Coast. An example is shown below:

Start with bread and then a layer of salad leaves to represent the swampy forest vegetation that would become coal;

Another layer of bread to represent a change in time, then a layer of peanut butter because it's a bit like the colour of sand in the desert;

Another layer of bread covered in shrimp paste to represent the magnesian limestone in the Zechstein Sea;

Another layer of bread covered with chocolate spread with nut chips in to represent the boulder clay. Finish off with a layer of bread.

Delicious!

Tell the story of the rocks, how and when they were made and make the sandwich as the story unfolds. Underline the fact that the oldest is at the bottom.

2. A demonstration of erosion and deposition

Fill an oblong washing up bowl with damp sand. Out of doors, turn it out upside down to form a sand castle type block. Using a hose pipe and working slowly from the outside edge to the middle allow the water to erode the sand. You should end up with an eroded gulley and an area of deposited sand downstream.

Build a model of your own imaginary dene.

3. Landscape detectives

Finding evidence of the rocks and process involved in the creation of the landscape.

Look at an Ordnance survey map of East Durham.

Identify the location of the denes

The extent of cliffs along the coast

The location of the round hills and raised land that made up the high points of the barrier reef

Visit Castle Eden Dene or Hawthorn Dene

(It is important you contact the site manager to book and discuss your visit. See contacts in the introduction.)

Look for the following plants that indicate the presence of a lime rich woodland soil so indicating the presence of magnesian limestone:

Ash
Yew
Dog's mercury

If you can get there look for the following plants in the grassland at Denemouth or in Hawthorn Meadow:

Common (Black) knapweed
Bird's foot trefoil

Find evidence of a gorge cut into the limestone by the enormous flow of water as the glaciers melted.

Collect a piece of limestone to look at it in class.

Is the stream bed dry? This often often happens during dry spells as the magnesian limestone is porous and soaks up water.

Investigate the cliffs on the coast and find evidence of erosion by the sea and the presence of boulder clay. Look for pebbles on the beach that are not sedimentary. Could these be glacial erratics? Look for pebbles made up of a crystalline structure. These are igneous or metamorphic and so have been brought here by ice. Collect sea coal and sandstone pebbles to look at in class.

4. The Journey of a Speck

Children who drink the hard water from local sources, for example artesian wells, are themselves a direct link all the way back to the Zechstein Sea. The minerals such as calcium and fluoride being laid down in their teeth and bones started off in the magnesian limestone that was laid down in that sea over 250 million years ago. They are without knowing it a very real link to the rock they are standing on. The molecules (“specks” is a good way of describing these) now in their teeth and bones started on their most recent journey floating in the Zechstein Sea often as part of the organisms living in the plankton.

Write a story about the journey of one of the specks that make up your teeth. Where has it been and where is it going next?

5. A Frame in Time

Paint a series of time frame pictures for the class wall titled, “ The changing view from Beacon Hill”.

Time frame 1

When the hill was part of the barrier reef (Find out what animals lived in the Zechstein Sea)

Time frame 2

When the dinosaurs roamed past
Beacon Hill

Time frame 3

When the ice ages came

Time frame 4

Just after the ice went - tundra, woolly mammoths, sabre-toothed tigers and Stone Age man

Time frame 5

The view east across the plains before the sea came

Time frame 6

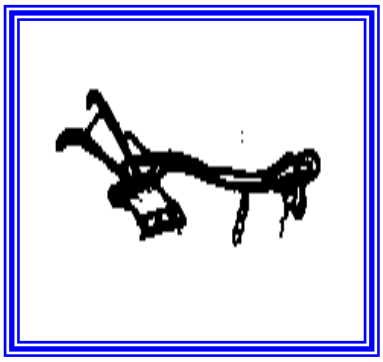
The view east now

Time frame 7

A view of the hill now

Time frame the future?

2.4 Geology and People



KS1
Activity Programme 1

Learning Outcomes

After this activity programme the pupil will understand the needs of prehistoric settlers and why they chose Crimdon Dene to live in. They will also understand how differently we use Crimdon today.

Pre-visit Activities

1. Research what people ate and how they lived in the Mesolithic and Neolithic times. Create a tick list of all the things you need to live, to take with you on the trip. Include food needs, water, shelter, protection, grazing land, clothing, tools etc. You will need two check-lists for each group.

2. Make up a picnic and collect things to play with on the beach.

Visit

Crimdon Dene and Beach

1. Split into groups of four and pretend you are a group of prehistoric people. You need to find a natural sheltered spot (a settlement) which will provide you with what you need to live.

2. Walk to the Dene and stop at an open grassland area. Go through your check-list to see if it is suitable.

Go further into the Dene and find a nice sheltered spot amongst the trees. Go through your check-list and see if this place is suitable.

Which place is the most suitable for your settlement and why?

3. Sit down in your settlement area and talk about what prehistoric people would have eaten and what they would have worn?

Have a look round and see if you can find any plants that could be food for the settlers. Do not eat them yourself as they could be poisonous. Prehistoric people learned the hard way which were safe to eat and which weren't; we don't want to do that.

Have a look for plants which could have been used for clothing or to make string etc. What else would they have used for clothing and sewing?

Would the settlement have been large or small?

Why isn't there a settlement there now?

4. What would miss you if you were suddenly transported back in time 4,000 years?

5. Walk on through the Dene to the beach. What do you think prehistoric people used the beach for? Look for clues.

6. What do we use the beach for today?Build sand castles, play ball games, play parachute games of your choice. Walk along the beach looking for interesting things, paddle in the sea. Take care to avoid strong currents. Have fun!

Post-visit Activities

1. Pretend you are a prehistoric estate agent trying to sell a particular place to a group of people as a settlement. Describe what the area has to offer and why it would be good for them.

2. Design a prehistoric dinner menu and compare it with one from a modern café. Discuss the two menus.

3. Make a sandy beach scene in a shoe box using papier mache, sand, paper and clay models. Put models of people having fun at the seaside into the model.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will have an understanding of settlement patterns in East Durham and how the geology of the area has influenced these patterns.

1. Collect some coal, coke, limestone and sand. Get the pupils to look at each carefully and find out some things about them such as how hard they are, are they rough, smooth, dull or shiny, can you draw with them?

2. Split the class into four groups. Using books, the internet and simple maps, each group must decide what their settlement needs and where it should be.

The first group are Iron Age settlers wanting to build a settlement. They need to consider what they need for food and water and where to get it from. What they need to build a house and where to put it. Where to keep animals etc. Where and how to bury their dead.

The second group are a Roman general on his way to Hadrian's Wall. They need to find a place to build a small staging post and look out site for a beacon. Again they need food, water and material for a shelter. They also need a way of getting to different places quickly.

The third group are Medieval farmers wanting to build a farm. They need suitable land for farming and keeping animals, crop types, a place to worship and material to build the farm. They also need to work out how they know where to plant the cops and keep them separate. They also need some way of making the crops grow better and provide that locally.

The fourth group are Victorian land owners wanting to build a coal mine.They need materials to build houses and the mine and transport for the coal as well as the coal itself. They also need a workforce who need somewhere to live.

3. Using a map of east Durham from the 1800's, look at it and decide where to put each settlement. Explain why you would put it there.

Get the groups to compare their places and discuss their similarities and differences. Are there any key settlements in those areas today? If yes what are they?

4. Get a map of the local area from 1900 and put all the pits and railways on it. Is there a connection between the pits and the railways and the towns?

5. Compare these maps with one for today. Is there more or less green space without towns on the current map than on the old map?

6. The local geology was used in the past to protect ships at sea. How was this done? Research different ship protection methods such as rocket points, lighthouses and lifeboats.

7. Look at a map of the Durham coast and decide where it would be a good idea to put these different ship protection methods. Put flags showing the protection method where you think they should be. Why aren't there any of these things there now.

8. Look at a map showing where you live. Why do you think your town developed there?

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will understand the relationship between settlement development and the use of the local geology. They will also understand how important coal was to the development of east Durham.

1. Get pieces coal, coke, limestone and iron of about the same size and get the pupils to test them for hardness, density, colour, chipping, magnetism, dust and drawing ability.

Put the results in a table and put the items in order of weight.

(These are things which can either be found in East Durham or can be made from things found here.)

2. Get maps of the Seaham area from the following dates: 1700's, 1850's, 1950's.

Look at all three maps together and see how the same area has changed over time. Discuss:

Which map shows the most farm land?
Which map shows the most pits?
How many towns are there on the1700's map?
How many on the 1850's map?
Which map shows the largest settlements?

2. Look at a map of East Durham today. Put on it the pits, lime kilns, quarries and iron works described in the Turning the Tide Archaeological Report 1997 and on the Keys to the Past and Durham Mining Museum websites.

Using different coloured string for the different processes of coke, lime and iron production, connect the industries dependant on each other for materials.

Can you see any connections between these features and current day settlement?

3. How has your local area changed since the 1700's? Get maps and also speak to grandparents etc.

What has been the main influence in the development of the place where you live?

4. Imagine what East Durham would be like if coal had not been found there. Look on the map of the 1700's and compare it with a current day map.

Which towns do you think would not exist today if coal had not been discovered?

Which villages might have grown into towns instead of the pit villages?

Which might have grown anyway and for what reasons?

5. Make a coal seam profile using information from the Durham Mining Museum website. They could make it a scale model picture by saying 1cm represented 1m. You will probably need several pieces of paper stuck together to finish the profile and possibly a large field to display it in!

6. If possible do a tour of pit villages in the East Durham area.

Look at how they are laid out, are they similar or different?

What do the houses look like?

Is there any sign of the pit today? If not what is there now?

KS2
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will be familiar with the different farming methods used through the ages and the importance of lime in East Durham.

1. Split the class into five groups. Each group represents a farming community at a particular time in history, Iron Age, Anglo Saxon, Medieval, Georgian and Victorian.

Each group should research their time period and find out what a farming community was like. This should include field sizes and shapes, boundaries, crops, who the crops were for, farmhouse construction and farm ownership.

As a group design your own farming community on paper and then make a model of it in a large box with one side removed. The class as a whole should then discuss the different settlements to find their similarities and differences.

2. In pairs develop a four-year crop rotation system. Use a shoe box to represent the field boundary and divide it into four equal strips. Using different coloured card for the four different crops (see Key Concept 2) place them in the box. For the next year swap the strips over as per the plan in the teacher's notes.

It is best if each pair starts off with a different pattern and they are noted down each year. Work out how many strips grew each crop each year. Are they even? Should they be even? How would you make them even? Besides the crop rotation system, what would make the soil more fertile?

3. Look at maps of East Durham for the late 1700's, mid 1850's, early 1900's. Can you identify where the fields were? Are there more or fewer in the 1700's than in the 1800's?

Are they bigger or smaller fields than then? Why is this so?

Why are there no fields in the Denes?

In the Bronze Age much of East Durham was covered in trees, what did these people have to do to grow crops?

4. Pick one of the time periods and write a story about life as a farmer's child.

5. Look on the maps above; can you see any limestone quarries or lime kilns indicated? Using archaeological records discover where others are thought to have been.

Mark on the maps where these quarries and kilns were. Is there a connection between them and the fields?

What is the connection between lime and farming?

What made East Durham a good place for lime production?

6. Look at a modern day map of your area.

Are there any fields nearby?
What size and shape are they?
What crops are in them?
How do they compare with the crops and fields of past ages?

7. If possible try and make a visit to one or more of these sites and see evidence of Medieval farming practices and lime working.

Beacon Hill – field boundaries
Cold Hesledon – ridge and furrow
Dalton-le-Dale – ridge and furrow
Hawthorn Hive – lime quarry and kiln

2.5 People and the Coast - *Sea trade and commerce*

KS1
Activity Programme

Learning Outcomes

After this activity programme the pupils will have an understanding of the importance of European trade and Seaham Harbour. They will also have an understanding of the different fish found in the sea which people eat.

Pre-visit Activities

1. Find out which countries surround the North Sea and which goods different countries traded with each other. Particularly look at which countries traded with Seaham and what the trade was.

2. Make a fishing game by cutting out drawings of fish and putting paperclips in their backs. Tie a small magnet to a piece of string which is then tied to a piece of cane to make a rod. Put the fish inside a large box which can be painted to look like the sea. The aim of the game is to try and catch as many fish with the rod as you can in 1 minute. You could make it more difficult by putting the box at eye level so you can't see inside.

Visit
Seaham

1. Go to the harbour and look at it closely, answer the following questions:

What is it made of?
How many docks are there?
Are there the same or different things in each dock?
What is the water like inside the harbour compared to outside?
How is the harbour protected?
What is at the harbour mouth and why?

2. Go to a local fishmonger's and look at the different types of fish for sale. Guess which were caught by Seaham boats and which came from further a field. Go and speak to the fishmonger and ask them which fish were caught at Seaham. How does this compare with what you thought?

Post-visit Activities

1. Fish parachute game
Get a large parachute and place the pupils evenly around it, holding the 'chute tight with both hands at waist height. Go round the 'chute giving each pupil the name of a fish. Make sure there are an even number of pupils for each fish. One person is named as the fisherman. The fish go under the 'chute and so does the fisherman. The fisherman must tag as many fish as they can and get back to the 'chute edge before the 'chute falls.

2. Research what fish were brought into Seaham in the 1900's. Draw pictures of the fish and make a Seaham Fishmongers collage with them or a mobile using string and a coat-hanger. You could make clay or papier

mache models of the fish and make a fishmongers stall and then sell your fish to your classmates.

3. Look at a map of Europe and the North Sea. Join the places that traded with Seaham using pieces of string. Use a different colour to show things coming into Seaham to those going out of Seaham.

KS2
Activity Programme

Learning Outcomes

After this activity programme the pupils will be familiar with the different fishing methods needed to catch fish that live in different parts of the sea. They will also understand how the information on wrecks can help us understand trading patterns in the area.

Pre-visit Activities

1. Research where different fish live in the sea. Create a large picture (A1 size) of under the sea. Put pictures of fish where they live on the picture and add a trawler to the surface. Make sure you include a shallow bit for lobsters and crabs.

2. Research the different fishing methods used to catch these different fish.

3. Make some different mesh sized nets using old tights, pond dipping nets, large climber mesh from a garden centre. Make the mesh into a bag shape and attach to a piece of garden cane.

Draw and cut out different sized fish and other things found in the sea including rubbish and very small things. See which nets can catch the most things. Which nets let the most through?

4. Get a map of Europe and the North Sea. Using string, connect the countries you think traded with Seaham and Britain in the 1850's. Put on the routes, what you think the cargoes were?

Visit

Seaham Harbour

Look for any boats in the harbour. What kind are they? What cargoes might they have on board? Are there any goods on the dock side? If yes what are they? Can you see any nets or lobster pots in the harbour?

Are there any trawlers or cobles in the harbour? If yes, what fish might they have caught? If no, where do you think the boats are?

Post-visit Activities

1. Use the nets made earlier and play the fishing game. The person with the net stands about 10m from the others in the group who have to throw different sized objects to the nets. One person at a time throws the objects. The net has to try and catch them and keep them in the net. (Make sure some of the objects are smaller than the mesh size so they can go through).

How do different net sizes affect the type of fish they can catch? The fine net will catch everything, is that a good thing?

2. Give the pupils information on wrecks found off the Durham coast. Include where they were from, going to and what they were carrying. Also give them the weather at the time of the wreck.

Ask the pupils to come up with ideas as to how the ships were wrecked. Give the pupils the actual reasons and see how they compare with their ideas.

How does the information from the wrecks match with your thoughts on the trade routes and cargoes?

3. Using the following basic information about a wreck write a newspaper report of the event:

Date: 26th April 1917
Ship: Norwegian steamship Abigail
Cargo: Wood to Seaham
Crew: 28 all rescued
Sank: 5km off Featherbed Rocks
Weather: Calm, clear,
Other info: Periscope sighted

2.6 People and the Coast - *Sustainability and the Future*

KS1
Activity Programme 1

Learning Outcomes

After this activity programme pupils will have direct first-hand experience of harmful human activities on the sea

Beachcombing

You will require:

Disposable gloves
A digital camera

Visit a stretch of sandy beach that preferably has a Green Flag award and gather up the things found along the strand line into one place to create a beach sculpture or a beach mosaic. Point out to the children that some of the things they have collected are natural and belong there or have washed up there and others do not belong and have been thrown away by people either at sea or along the coast. See if they can guess where the different things came from. There may be clues on them.

Take a few pictures of the works of art before they are washed away by the tide.

Take some pictures along the beach for comparison later with old photographs of sea-coalers collecting coal. You may wish to bag up and remove items of rubbish at the end of the activity to set a good example.

Look for some sea coal to take back to class for discussion later.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme pupils will have discovered for themselves how we have damaged the coast in the recent past and how we have cleaned up the damage caused. They will also have examined a current problem and how it is affecting sea creatures.

Detectives

Gather information from grandparents about their memories of the coast:

What was it like when the mines were working?

Did they ever gather or burn sea coal on the fire?

Where did it come from? How did it get on the beaches?

Look at old photos of Dawdon Colliery at Nose's Point and the effects that tipping had and compare with the way it looks now.

Compare old photos of sea coalers collecting coal on the beach with the way it looked the day they went beachcombing.

Look at the pictures of their mosaics and sculptures. How much plastic was there? Plastic is becoming a big problem in the sea for a lot of the animals that live there. Carefully select some of the pictures on www.marine-litter.gpa.uneo.org to find out more.

KS2
Activity Programme 1

Learning Outcomes

After this activity programme pupils will have direct first-hand experience of harmful activities on the sea. They will also have examined ways of reducing an environmental problem.

Beach survey

Litter washes up on the most remote beaches miles from any settlements in some of the most beautiful places in the country and all over the world. Its effect out at sea can be very harmful to marine life.

Collect and categorise the litter found on a beach and attempt to identify its origin; ship-based or shore-based.

How did the litter get there?

Investigate the effects of litter out at sea on marine life. To find out more see:
www.marine-litter.gpa.uneo.org

How can the problem be reduced?

KS2
Activity Programme 2

Learning Outcomes

After this activity programme pupils will have carried out an investigation on marine pollution and overfishing in the North Sea. They will have an understanding of some of the effects of pollution in a food chain. They will have an understanding of renewable energy options.

Marine pollution

Investigate how we pollute the sea:

From domestic sources
From industrial source

What are the effects on sea life?
What are the effects on people?

Find out about bio-accumulation and what it means to marine food chains and to people who eat some types of sea food.

Investigate what is meant by over-fishing in the North Sea and its effects on sea birds.

The sea as a solution

Find out what is meant by global warming;

What are the causes?
What can we do to try and stop or reduce the problems?

What is meant by renewable energy?

Use a dynamo to produce electricity and light up a torch bulb.

Find out about how waves and tides can be used to produce electricity.

Find out about offshore wind turbines.

A debate

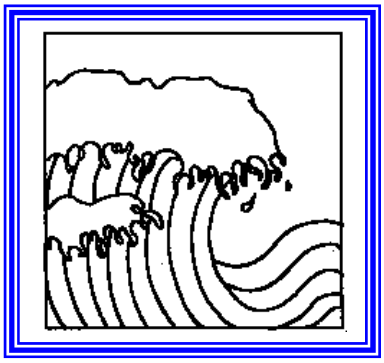
Do you think these types of energy can or should replace coal and oil as our main sources of electricity?

What would you feel about them being put along the Durham Heritage Coast or near your house?

Useful web site: The Marine Conservation Society www.mcsuk.org

They also run an Adopt-a-Beach programme for schools and community groups.

2.7 The Sea as a Force of Nature



KS1
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will have an understanding of the water cycle. They will also understand the nature of tides and the erosion effects of the sea through waves.

Pre-visit Activities

1. In a large bowl of water use a hairdryer on different settings and see what effect it has on the water in the bowl.

2. Using a small water gun see how big a pebble you can move with the water stream.

3. Look at the local tide tables for Seaham and see when it would be a good time to visit. The tide needs to be coming in.

Visit

Seaham Hall Beach and Featherbed Rocks

1. Demonstrate the water cycle using a sponge to act as the clouds and a bucket of water to represent the oceans.

Bury the bucket in the sand so the top is level with the sands surface. Use the dug out sand to build a mound next to the bucket.

Load the 'cloud' up with water from the 'ocean', raise it into the air and move it over the mound. Squeeze the 'cloud' and watch the 'rain' fall out of it onto the slope. Watch the water run down the slope like a 'river' back into the 'ocean

2. Measure the distance from the waters edge to the strandline. Every 10 minutes take the measurements again to see if the tide is going out or coming in and how fast it is moving.

3. Find a small pebble and put it near the water's edge where the waves break. Watch what happens to the pebble for 5 minutes. Does it stay in one place all the time or does it move? If it moves how does it move – straight up and down or up, down and along the beach?

4. Get one third of the class to make some sandcastles, one third to make castles out of small pebbles and the last third to make castles out of large pebbles. Try and make the castles all roughly the same height and size and put them as near to the waters edge as possible. Watch what happens to the castles as the tide comes in. Which castle lasts the longest?

5. Move north along the beach a bit and look at the limestone cliffs. Are they straight up or slanted? Are they smooth or rough? Can you see any cracks or caves? What has made the cliffs look like this?

Blackhall Rocks has better cliffs, caves and stacks and it can be accessed from Crimdon Beach via a 1.5km walk along the beach. You need to be particularly aware of the tides to do this so you have time to walk back to Crimdon.

Post-visit Activities

1. Get into lines and pretend you are waves. Roll in together and make your own sound effects using sand and pebbles. Is the tide coming in or going out?

2. Make a collage of the water cycle.

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will understand how to interpret and use tide tables. They will also understand the effects of the force of the sea on humans and how we can defend against this force.

Pre-visit Activities

1. Get tide tables for the area you are going to visit. Study them and find a suitable time to visit and how long you can stay on the beach. The tide needs to turn at some point during the visit if possible.

2. Get some thick cardboard boxes and draw some different sized houses onto the card and cut them out leaving a 10cm tab at the bottom of each house. Fold the tab under the house so the house stands upright on its own.

Visit

Seaham Hall Beach and Featherbed Rocks

1. Recap the water cycle using the activity in the KS1 programme.

2. Look at the cliff faces. Are they smooth or rough? Can you see any horizontal lines on them? If yes, what could these lines be? Are there any cracks or caves in the cliffs? How do you think these were made?

Again Blackhall Rocks has better cliffs, caves and stacks, accessed via Crimdon Beach but be careful as they can be unstable.

3. Stand your house models in a line on the beach. Everyone has a tennis ball which they roll along the beach at the same time to try and knock the houses down. How easy is it to knock the houses down?

Next put some large pebbles scattered in front of the houses and try to knock them down again. Is it easier or harder to knock them down now? Why?

4. Look at the promenade:

> What is the sea wall made of?
> Is it vertical or curved?
> Why are there holes at intervals along the wall?
> What other sea defences are there on the beach?

5. Look over to the harbour area. What is protecting the harbour wall?

Post-visit Activities

1. Give the pupils the first eight entries on a tide table and see if they can find the pattern and work out the next eight entries. Compare their suggestions with the real entries. Find the tide turn point on each of the entries.

2. Research different areas along the North East Coast and see the effects of the sea and how they defend the land from these effects.

Which defences are best at protecting cliffs or walls?

Which are best for protecting land edges?

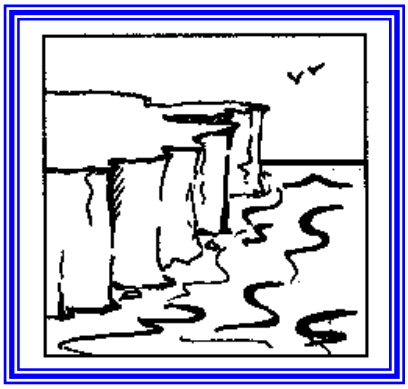
Which are best for stopping sand blowing along the beach?

3. Make a large model of a coast line with cliffs, beach and houses. Make some models of the defences and add these to the scene in their appropriate place.

4. Think about better ways in which you might be able to protect the beach, cliffs and land from erosion by the sea in this area.

You need to weigh up the benefit of the defence against the cost of the natural beauty of the place and the cost of defence.

2.8 Life on the seashore



KS1
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will be familiar with common rock-pool animals and how they live and will be able to use a simple key. They will also be able to recognise different habitats.

Pre-visit Activities

1. Make a pool goggler

Get a 2 litre plastic lemonade bottle, some cling-film and waterproof tape.

Cut the top and bottom off the plastic lemonade bottle to make a clear cylinder. Put tape around the two ends to cover the sharp edges.

Get 2 or 3 layers of cling-film or thicker plastic film and pull it tight over one end of the cylinder and secure with waterproof tape.

Make 2 holes near the top of the bottle opposite each other and thread a long stick through to act as a handle and keep the bottle rigid.

2. Research rock-pool life in books and on the internet. See what different animals eat and what eats them.

3. Get 2 glasses of tap water and add 2 teaspoons of salt to one glass. Take a sip of both glasses and see what it tastes like. Which glass would sea animals like to live in?

Visit

Featherbed Rocks or Blackhall Rocks via Crimdon Beach

1. Put the cling-film end of your pool goggler slowly into a rock-pool so the viewer is half submerged. Look into the open end and see what you can see.

2. Look at the animals in the pool. What do they look like, how do they move, what do they eat etc. Do not take the animals you see out of the rock-pool as you might harm them. Draw one of the animals you like.

3. Use the seashore dial to find out what your animals are and what they eat etc.

4. Get each pupil to be a rock-pool plant or animal, make sure there are twice as many plants in total as animals. Give them a couple of minutes to work out what they eat and what eats them using the seashore dial. Then play a catch game whereby those who are plants can not move whilst those who are animals can run around and try and catch what they eat whilst trying not to be caught by those that eat them.

When a player is caught they must sit down. Play the game for 1 minute and see who is left. Swap people over and play again.

5. Go to the cliff area of the beach and look at the cliffs. Can you see anything living on the cliffs? If yes, are they plants or animals. Why might birds like to nest on the cliffs? Why don't large plants grow on the cliff face?

It is not advisable to get too close to the cliffs or go into the caves as they can be very unstable and bits of rock may break off.

Post-visit Activities

1. Make a rock-pool food chain mobile using string, a coat-hanger and the drawings you did at the rock-pools.

2. Why do a lot of marine animals choose to live in rock-pools? What would happen if they chose to live in the pebbles or on the beach

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will be familiar with life on a sandy shore and dune system. In conjunction with Activity 1 they will be able to recognise the differences between habitats.

Activities

1. Familiarise yourself with the plants and animals you find on the seashore using books and the internet.

2. Do the Beach parachute game as described in KS1 Programme 1 in the "Sea as a Force of Nature" section.

Visit

Crimdon Beach

1. Start at the top of the beach nearest the dunes and walk towards the water's edge. At 10m intervals look at what is at your feet. Does this change as you get closer to the sea? Can you see any evidence of animals living on the beach?

2. Look for squiggly sand casts or round dips in the sand. When you find one get the teacher to dig down to see if there is anything in the sand. If they don't find anything think about what might have made the marks and where it has gone.

3. Sit at the top of the beach very quietly for 10 minutes and see if any birds come onto the beach. What colours are they and what are they looking for? Where on the beach are they?

4. Why do you think seabirds can often be seen looking in the strandline?

Take a walk along the strandline. Can you see any animals living in it?

What are they?
Why are they there?
What are they eating?
What do you think eats them?
Are there any plants living in the strandline?

5. Look above the strandline and see if you can see any plants growing. These can include flowering plants, grasses and lichens on rocks. Describe their shape, colour and size.

Why are most of these plants not seen below the strandline.

Why are there no trees growing on the beach?

6. Look at the dunes at the top of the beach.

Are they bigger or smaller than you are?
What is growing on them?
Are there any animals on them?

Post-visit Activities

1. Make a collage of the beach in a large cardboard box. You can use sand and pebbles and paper to show the different zones you saw and what was in them. Don't forget to put where different plants and birds were seen.

2. Make up a plant or animal that could live on the beach. You need to think about what it needs to live including food and shelter, what might eat it and how it is adapted to coping with the salt water spray and tide coming in.

3. Pretend you are seagull living on the sandy shore. Write a short story about what a day is like for you.

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will be familiar with common rock-pool animals and how they live and will be able to use a simple key. They will understand interrelationships between the animals and their adaptations to rock-pool life.

Pre-visit Activities

1. Research rock-pool animals what they eat, where they live and what eats them.

2. Make a pool goggler as in KS1 Programme 1.

Visit

Blackhall Rocks via Crimdon Beach

1. Go pool goggling as in KS1 Programme 1.

2. Using the seashore dial find out the following about each animal you can see.

Has it got legs? How many? How does it move?

What does it eat? How does it feed?
What eats it?

Can you see any evidence of feeding taking place in the pool?

3. Pick one of the animals and describe how it is adapted to life in a rock–pool.

Post-visit Activities

1. Seashore Habitat game
The aim of this game is for seashore animals to find their food, habitat and a mate.

You will need the following cards which can be drawings done by the children or just the names written on them:

Plankton x 4 Detritus x 2 Seaweed x 1
Shrimps x 3 Limpets x 2 Mussels x 1
Small fish x 1 Tiny animals x 1 Cockles x 1

Seaweed x 4 On Shells x 4 Rocks x 4
1 large Rocks card 1 large Seaweed card
1 large Sandy Bottom card
1 large On Shells card Sandy Bottom x 4

2 of each animal - Barnacle, Mussel, Starfish, Dog Whelk, Anemone, Crab, Sea urchin and Razor shell

Place the large Habitat cards in a line then scatter the Food and small Habitat cards around the beach. Get the pupils into pairs and give each pair an animal card. Tell them to go and find one food item card and one habitat card. When they have got their two

cards they need to go to one of the large habitat cards and stand there.

When everyone is at a Habitat card tell them that if there are not two of your animal in your habitat you have to move to another one to find a mate. Check what they have chosen to eat and where they have chosen to live.

You accommodate different numbers in a class by changing the number of cards. Remember you need two of each animal and if you remove any you also need to remove a habitat and food card relating to that animal.

Answers:

Barnacles – rocks or on shells, plankton or detritus

Anemones – rocks or on shells, shrimps or small fish

Mussels – rocks , plankton

Starfish – sandy bottom, limpets or mussels

Dog Whelk – sandy bottom or rocks, cockles or limpets

Crab – seaweed or rock-pool, shrimps or small fish

Sea urchin – seaweed or rocks, tiny animals or seaweed

Razor shell – sandy bottom, plankton or detritus

Make up a new rock-pool animal. You need to think how it is adapted to rock-pool life, what it eats and how it gets its food and what might eat it. You should draw your animal with explanations and give it a name that describes it.

KS2
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will understand that lugworms are an indicator of damp sand and animals living in the sand. They will also understand how sea bird beaks are adapted to eating different seashore animals and how dunes are formed and colonised.

Post-visit Activities

1. Research animals which live in the sand. What are they like, what do they eat etc?

2. Research what different sea birds eat.

3. Make models of different seabird beaks using papier mache or clay etc. to take with you on the trip.

4. Research the different stages in dune formation and succession.

Visit

Crimdon Beach

1. Start at the top of the beach and walk towards the water's edge. At 10m intervals look at what is at your feet. Look for sand squiggles or round depressions.

Are the sand squiggles found all over the beach or just from a certain point on the beach? What is the sand like where the squiggles are, is it dry or damp?

What do you think the squiggles are a sign of?

Pick a squiggle and get the teacher to dig down to see what is there. If there is nothing why? What could have been there?

Why don't you see the worms on the surface of the sand? What do they eat?

4. Try out your beak shapes to see how effective they are in damp sand, dry sand, strandline, pebbles, water etc. Which are best for different places and food? Can you see any seabirds on the beach? If yes where are they and what are their beaks like?

5. Go over to the dunes. Measure how long they are and how high they are. Work out which direction the wind usually blows. Look at what is growing on the dunes and behind them.

6. Look for evidence of the different stages of dune formation from simple sand piles to fully colonised dunes.

Post-visit Activities

1. Looking at the results of your beak experiment, which beaks would not be good to get at lugworms? Why?

2. Try and recreate the process of dune formation using a pile of sand in a box and a hair dryer on a low setting. Point the hairdryer in different directions to see what happens to the sand. Put a large pebble in the box and see what happens when you turn the hair dryer on.

2.9 Magnesian Limestone Grassland

KS1
Activity Programme 1

Learning Outcomes

After this activity programme pupils will have used a range of their senses to explore a grassland in a number of different ways. They will also have become familiar with what a grassland is and what it contains.

Getting to know a grassland

(It is important you contact the site manager to book and discuss your visit. See contacts for sites in the introduction.)

A) An Earthwalk

An Earthwalk is a special adventure to experience the richness and wonders of the natural world. It is a light refreshing way of discovering nature. The emphasis is upon awakening individual senses and sharpening perceptions.

An Earthwalk is made up of a series of special sensory activities. The activities present a new way of looking at familiar things and an interesting introduction to the unfamiliar.

It provides a wonderful introduction to the natural world, breaking down the barriers that so often exist between people and their environment. All of the following activities can be found in "Earthwalks" published by the Institute for Earth Education. Camera can be found in "Sharing Nature with Children" by Joseph Cornell.

Colour Dabs
Whiffs
Touches
Camera (from Cornell)
Symphony

B) Duplication Game

You will require:

Two large cloths
A paper bag each for collecting the objects

Collect a selection of ten or more natural objects that are representative of the location. Place them on a large cloth and cover them over with another cloth. Pull the cloth back and allow the children to look at the objects for 30 seconds before covering them over again.

The children go off and see how many they can remember and find. When they have finished collecting pull the objects out one at a time and tell them a little bit about each one (e.g. this is the shell from a snail that was a good meal for a thrush).

To add a spark of magic pull out the objects in a given sequence and tell a full grassland story using the objects as props.

C) Scavenger Hunt

You will require:

A list of twenty or more natural things from the area for the children to find
A collection bag for each child
A collection jar if a minibeast is to be collected

<u>A sample scavenger list</u>

Only collect things that you can return safely and without damage. You can only use each thing once; you need a different thing for each "find" on the list!

One seed spread by the wind
Exactly 100 of something
A thorn
A bone
Three different kinds of seed
One camouflaged animal
Something round
Something fuzzy
Something sharp
Something very straight
Something beautiful
Something that is of no use in nature
A chewed leaf (not by you)
Something that makes a noise
Something white
Something important in nature
Something that reminds you of yourself
Something soft
A sun trap
A big smile

D) A grassland picture with a difference

You will require:

Permission from the site manager and a location where no harm can be done
An A3 sheet of white card per child (plus a few spares just in case!)
A few jars with water
A few "Pritsticks"
Disposable gloves

Paint a picture using natural grassland colours. Most things will yield up a colour when rubbed on to the white card if they contain any moisture. Dry soil etc can be moistened slightly to produce a colour. Using common flowers will produce a great deal of variety of colour. A wonderful three dimensional effect can be achieved by sticking on leaves, grass stems and flowers etc.

Chose your area carefully. Check with the site manager first. Care must be taken to choose an area where there is nothing important and that has a good selection of very common plants and flowers eg rosebay willowherb etc. Avoid areas with ragwort as this is poisonous and can be absorbed through the skin although large quantities of sap are needed. Also avoid areas with hemlock which has a white umbrella shaped flower with very distinctive purple-red blotchy spots on the stem. Giant hogweed is unlikely to be found but is unmistakeble for its size and waterside location.

If in doubt issue the disposable gloves.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will be familiar with the body structure and function of a range of physical characteristics of a number of different invertebrates species. They will also have a basic understanding of food chains, adaptations and habitat as they apply to grassland.

Minibeasts

(It is important you contact the site manager to book and discuss your visit. See contacts for sites in the introduction.)

Using pooters and sweep nets find and describe the minibeasts in the grassland.

Use sweep nets through vegetation, two or three sweeps is enough. Try different groups of plants as some attract more minibeasts than others.

Pooters, sweep nets and magnifier jars are readily purchased from educational supply catalogues.

Get the children to take note of the following

Colours and camouflage
Shape, structure (appendages etc)
Movement
Food and ways of eating (the minibeast dial will help you to find out what eats what)

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will have carried out a scientific investigation of a grassland habitat. They will have compared two different areas and determined how they are different. They will also have decided why they are different and worked out how changes can be made to improve the habitat.

Grassland Survey

(It is important you contact the site manager to book and discuss your visit. See contacts for sites in the introduction.)

Survey a grassed area in the school grounds.

Survey a magnesian limestone grassland.

Take a line transect using frame quadrats and record the frequency of grass and wild flowers. The frame should be 1mx1m square and can be made very simply using cord and four tent pegs. Tie four loops spread out at 1metre intervals in the cord; these will be the corners of the frame.

The line transect should be between 30m and 50m in length. They should be the same length in both habitats. Record a frame at 5m intervals along this length.

There is no need to record species names, a sample leaf can be collected as each wild flower is found, put in a bag and labelled herb 1, herb 2 etc. The aim is to record how many different wild flowers are found in a random transect in the two places and how often they are found. Measure the height of the tallest vegetation at each point quadrat taken. Describe the general appearance of the two different areas and also describe the area that surrounds them.

Survey the minibeasts in both areas using sweep nets and pooters. Again no need to identify species, the children can give the minibeasts found their own descriptive names e.g. red back six legger, whopping big black beetle etc. The aim is to find out how many different minibeasts live in each place.

Calculate how many different wild flowers are found in each place, the average height of the tallest vegetation and the number of different minibeasts found.

Decide which is richest in wildflowers and minibeasts. What are the possible reasons for any differences found?

How could the school grassed area be made better for minibeasts?

Make and use a simple key based on the leaves of the wildflowers collected.

Are any of the wildflowers found in both places? Investigate the reasons why some plants grow in one place but not in another

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will have compared and contrasted the invertebrates in two different habitats. They will be familiar with the body structure and function of a range of physical characteristics of a number of different invertebrate species. They will have a basic understanding of food chains, adaptations and habitat as they apply to these two habitats.

(It is important you contact the site manager to book and discuss your visit. See contacts for sites in the introduction.)

Compare grassland minibeasts with leaf litter minibeasts in a woodland

Use the recording sheet in Section 3 Resources to help collect your information.

Describe the two habitats:

What do they look like?

What is growing there?

What are the light levels?

Is it sheltered or exposed?

What food sources are there for minibeasts?

Using pooters and white trays in the leaf litter and pooters and sweep nets in the grassland, find and describe the minibeasts in both habitats.

Where exactly did you first find it? This is likely to be where it belongs.

What colour is it? Is it a good colour if it wants to hide?

Does it have wings?

How many legs has it? Six, eight, many, none?

Are they short or long?

Describe its body shape?

How does it move? Is it fast or slow?

Would it be good at escaping from something that wanted to eat it?

What do you think it eats?

Use the minibeast dial included in the pack to help find out more about the minibeasts collected.

Compare the two places:

Which minibeasts are found in both places?

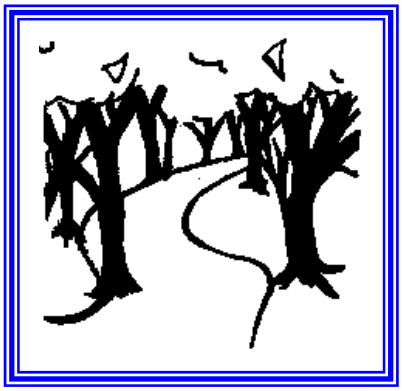
Which ones did you only find in the leaf litter?

Which ones did you only find in the grassland?

What are the main differences between the ones you find only in one place or the other?

How do you think these differences suit them to the place they live?

2.10 The Wooded Denes



KS1
Activity Programme 1

For all these activities it is important you contact the site manager to book and discuss your visit. See contacts for sites in the introduction.

Learning Outcomes

After this activity programme the pupils will have used a range of their senses to explore woodland in a number of different ways; they will be familiar with what a woodland is and what it contains.

Getting to know a woodland

A) An Earthwalk

An Earthwalk is a special adventure to experience the richness and wonders of the natural world. It is a light refreshing way of discovering nature. The emphasis is upon awakening individual senses and sharpening perceptions.

An Earthwalk is made up of a series of special sensory activities. The activities present a new way of looking at familiar things and an interesting introduction to the unfamiliar.

It provides a wonderful introduction to the natural world, breaking down the barriers that so often exist between people and their environment. All of the following activities can be found in "Earthwalks" published by the Institute for Earth Education. Camera can be found in "Sharing Nature with Children" by Joseph Cornell.

Leaf Slides
Whiffs
Colour Dabs
Wind Dancers or Camera (from Cornell)
Symphony

B) Duplication Game

You will require:

Two large cloths
A paper bag each for collecting the objects

Collect a selection of ten or more natural objects that are representative of the location. Place them on a large cloth and cover them over with another cloth. Pull the cloth back and allow the children to look at the objects for 30 seconds before covering them over again.

The children go off and see how many they can remember and find. When they have finished collecting pull the objects out one at a time and tell them a little bit about each one (e.g. this is the feather from a bird that was a good meal for a fox).

To add a spark of magic pull out the objects in a given sequence and tell a full woodland story using the objects as props.

C) Scavenger Hunt

You will require:

A list of twenty or more natural things from the area for the children to find

A collection bag for each child

A collection jar if a minibeast is to be collected

A sample scavenger list

Only collect things that you can return safely and without damage. You can only use each thing once; you need a different thing for each “find" on the list!

A feather
One seed spread by the wind
A pine needle
A thorn
A bone
Three different kinds of seed
One camouflaged animal
Something round
Part of an egg
Something fuzzy
Something sharp
A piece of fur
Something very straight
Something beautiful
Something that is of no use in nature
A chewed leaf (not by you)
Something that makes a noise
Something white
Something important in nature
Something that reminds you of yourself
Something soft
A sun trap
A big smile

D) A woodland picture with a difference

You will require:

Permission from the site manager and a location where no harm can be done

An A3 sheet of white card per child (plus a few spares just in case!)

A few jars with water

A few "Pritsticks"

Disposable gloves

Paint a picture using natural woodland colours. Most things will yield up a colour when rubbed on to the white card if they contain any moisture. Dry soil etc can be moistened slightly to produce a colour. Using common flowers will produce a great deal of variety of colour. A wonderful three dimensional effect can be achieved by sticking on leaves, grass stems and flowers etc.

Chose your area carefully. Check with the site manager first. Care must be taken to choose an area where there is nothing important and that has a good selection of very common plants and flowers eg rosebay willowherb etc. Avoid areas with ragwort as this is poisonous and can be absorbed through the skin (although large quantities of sap are needed). Also avoid areas with hemlock which has a white umbrella shaped flower with very distinctive purple-red blotchy spots on the stem. Giant hogweed is unlikely to be found but is unmistakable for its size and waterside location.

If in doubt issue the disposable gloves.

KS1
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will have compared and contrasted the invertebrates in two different habitats. They will be familiar with the body structure and function of a range of physical characteristics of a number of different invertebrates species. They will have a basic understanding of food chains, adaptations and habitat as they apply to woodland.

Minibeasts

Compare the minibeasts:

In leaf litter
In a sunny glade or from trees and bushes

Using pooters and white trays in the leaf litter, pooters and beating trays in the trees and bushes or pooters and sweep nets in the glades, find and describe the minibeasts in both habitats.

In the leaf litter gather a small handful of litter and spread it out in the white tray and look to see what moves. Collect with a pooter or direct into a jar.

A 75cm x 60cm sheet of white cloth with a bamboo cane fixed at either end makes a good beating tray. Hold this open using the canes under a branch and tap or shake the branch. Minibeasts will fall into it and can then be collected in pooters or magnifier jars. Hawthorn usually gives good results.

Use sweep nets through vegetation, two or three sweeps is enough. Try different groups of plants as some attract more minibeasts than others e.g. nettles are excellent.

Pooters, sweep nets and magnifier jars are readily purchased from educational supply catalogues.

Use the minibeast dial included in this pack to find out more about the minibeasts. Get the children to take note of the following:

Colours and camouflage
Shape, structure (appendages etc)
Movement
Food and ways of eating (the minibeast dial will help you to find out what eats what)

KS2
Activity Programme 1

Learning Outcomes

After this activity programme the pupils will be familiar with the component parts of a woodland and how they fit together to make a habitat. They will have developed an appreciation for a natural environment from an aesthetic point of view.

Getting to know a woodland

A) Recipe for a woodland

You will require:

A rope ring for each group

A recipe sheet

A sit upon for each person if the ground is wet

The children are split into groups of four or five and explore the surrounding woodland noting structure, habitats, plants and animals present. Use the recipe tick list included with the pack to ensure everything is included that is needed for a good woodland for wildlife.

Large rings of rope giving a diameter of at least two metres are placed on the woodland floor to represent the boundaries of woodlands.

In groups of fours or fives, the children work to create a woodland of their own using their

observations and the recipe guidelines. With imagination and a bit of creativity, using the natural materials in the woodland, they produce sculptures/models to represent all the things that a good wildlife woodland contains. Indicate to them that a fox, an owl, a stoat and some butterflies need to be able to live there. There must be a way of recycling dead plants and animals.

B) Meet a Tree

You will require:

A blindfold for each pair

Find an area within the woodland that has a fairly clear woodland floor, few low branches and readily accessible tree trunks. Tell the group you would like to introduce them to an old friend of yours. Take them over to your tree and tell them that the first time you met this friend you couldn't see it; you were led to it blindfolded, you got to know it by touch from the roots to as far up as you could reach. Then you were led away twirledaround a few times like in blind man's buff, so you didn't know where your tree was. Once your blindfold was removed you set off to find your tree by touch. It took you a while but you did it and now whenever you come to the wood you pay a visit to see how your special tree is doing. Now it's their chance to meet a tree.

Get the class into pairs. Show them how to guide each other, carefully walking side-by-side with one arm round the blindfolded person's shoulder the other holding their forearm to steer them carefully in a wandering path, with twirls and circles to confuse them. Then lead them to meet a tree. Take it in turns to be blindfolded.

C) Poe-tree

You will require:

A pencil and piece of paper for each pair

A clipboard and paper for the poets

A sit-upon for each person (Square of carpet or similar)

A selection of natural objects for the fill in activity in a bag

Select a particularly striking tree and arrange the children in their pairs at different vantage points around the tree so that they get very different views and impressions of it. Some distant, some close to the bark, some looking along a the length of a long branch, some on their backs looking straight up through the crown etc… Each pair chooses two words that best describe what they feel looking into the tree or what it reminds them of or what it looks like and so on.

Once the words are selected choose two poets who will take the words away and re-arrrange them into a special poem about the tree. Allow about 10 minutes for the poets.Tell them only to use conjunctions etc. not to add new nouns and adjectives. When they are ready get the whole group together siting on the ground on sit-upons facing the tree. Standing behind them read our their poem slowly while the class views the tree. Encourage a round of applause for the poets and the class itself and then tell them that it was so good that it deserves an encore. Read it again so that they can appreciate the poem they have helped create to the full.

You will need a fill in activity while the poets are at work. A useful activity is to get the smaller groups back together sitting in their circles with an adult. The adult then produces a series of natural objects to pass around the group. Each person in the circle describes or says one thing about the object as it is passed round. Depending on the group you could also try to build a story about the object. The adult starts with the first line of the story and as it is passed from one person to the next, one sentence of the story is added by each person, each one picking up where the last left off.

A variation is to have all the children in the circle blindfolded, give one child an object and

ask them to describe it and then pass it round the rest of the group so they can feel it and decide if it was what they expected from the description. Ask them to guess what it is when they have all handled it. A new object is introduced to the left of the first child and so it continues till they have all had a turn with a mystery object.

KS2
Activity Programme 2

Learning Outcomes

After this activity programme the pupils will have a clear understanding of key ecological principles that operate in a woodland. They will be aware that human societies and individuals are having a detrimental effect on the natural world and will be taking steps personally to reduce their impact on the natural world.

Earth Guardians

A short earth education programme introducing woodland ecology and sustainable living.

A map and letter arrive at school from a mysterious character, Greyleaf, the Guardian of the Wood. The request is for the pupils to join in a most important task to protect the green wild places of the world, from the harm that people are causing. To do this they must undertake a quest, solve problems and uncover secrets in order to prove themselves worthy apprentice guardians. The map will guide them on their trail of discovery. Greyleaf leaves clues and messages on their route. Once they determine how the natural world works and reveal the harm that people cancause they make a pledge to alter their lifestyles, in a number of easy ways to do less harm to the environment of which they are a part.

Activities (see Section 3)

Sunshine Pyramid
Box of Life
Leaf Funeral
Missing Woodlander Hunt
Pollution Pyramid
Magic Spot

Preparation

Familiarisation with:

Food chains

Photosynthesis

Some knowledge of global environmental issues would be useful particularly:

Carbon dioxide and sulphur emissions from power stations, and how that relates to our use of electricity

Water pollution e.g. the problems of the North Sea and how that relates to their own use of domestic water supplies (e.g. household chemicals)

Over-use of natural resources and the need to recycle e.g. recycling of aluminium, paper, plastics etc

Follow-up work suggestions

Work on getting rid of those environmentally bad habits they have pledged to do something about.

Investigate other ways in which we are damaging our environment and look foralternatives.

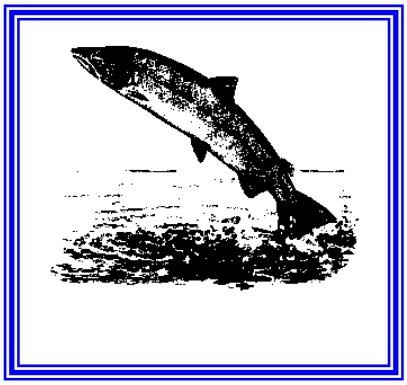
Investigate renewable energy sources such as wind, water and solar power.

Set up a recycling depot at school.

Build a compost bin and see how the minibeasts and fungi turn it into soil.

Investigate the ways in which people are threatening other animals with extinction.

2.11 Life Beneath the Waves



Adaptable for both KS1 and KS2

Learning Outcomes

After this activity programme the pupils will have a clear understanding of the variety of life hidden beneath the waves. They will understand the way of life of a range of different sea creatures. They will understand the concept of habitat, food chain, adaptation and life cycles as they apply to marine ecosystems.

Site visit

Visit a sea life centre eg at Tynemouth/Whitley Bay

Class Based

Recreate the life in the sea on the classroom wall.

Do a wide full height mural on lining paper fixed to the wall of the classroom, showing the sea bed gradually sloping away to show different depths, substrates and zones.

Research what animals and plants would live where in the sea, what they would eat and how they move around.

Do pictures of the animals and cut them out and stick them on the mural with bluetack in their correct habitat or place.

Write a diary entry, a day in the life of a favorite animal, where it goes, where it eats, what it eats and what it does to avoid being eaten itself.

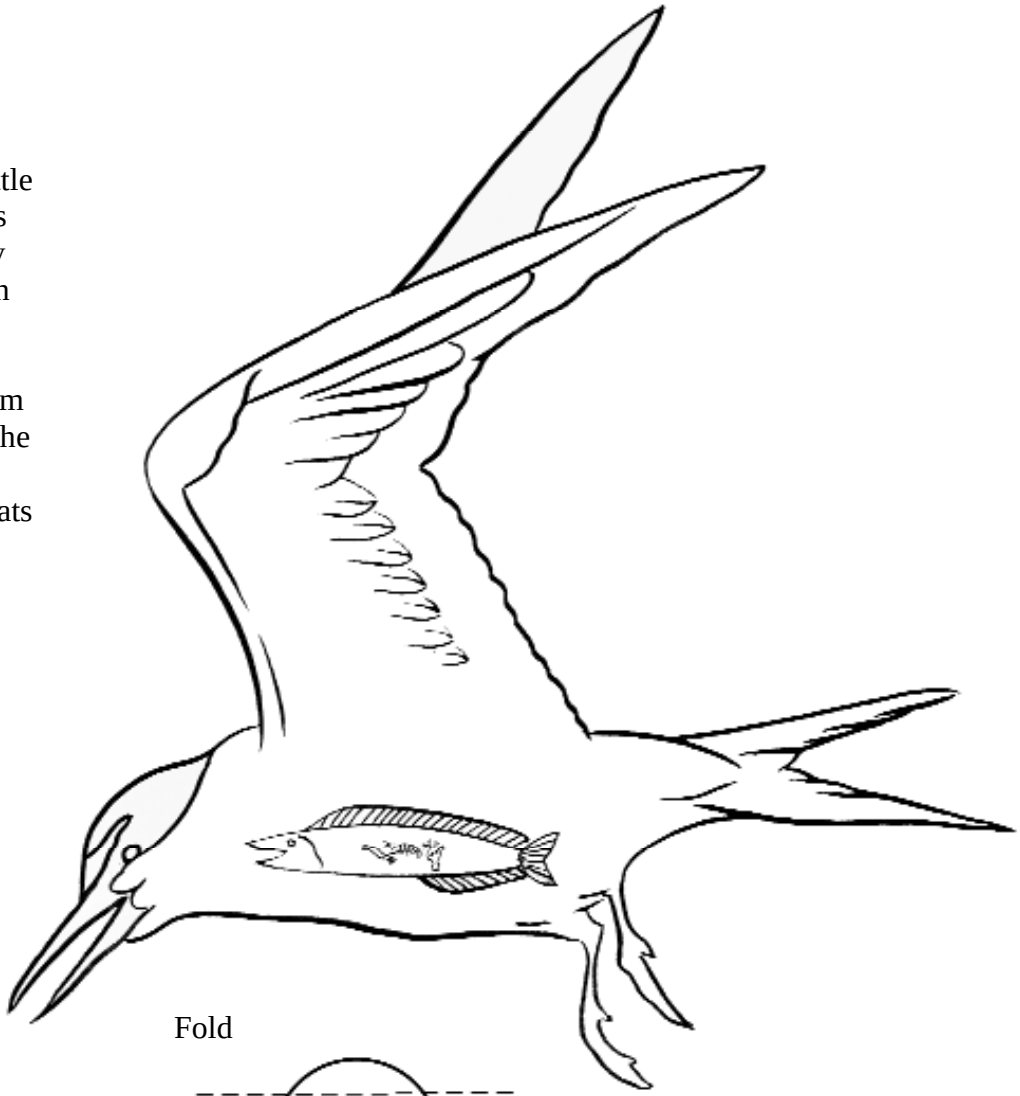
Make the little tern belly book and select other sea creatures such as crab, dolphins etc. to make other belly books for. (See next page)

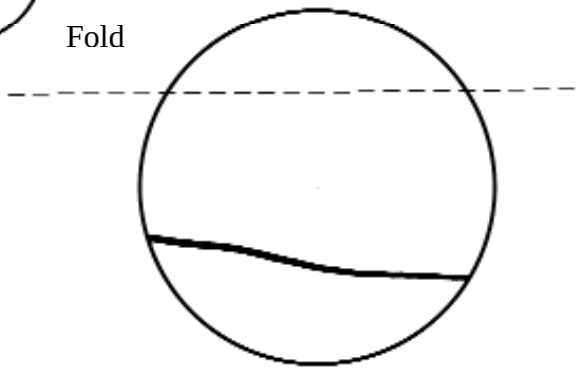
Little Tern Belly Book

This demonstrates a simple marine food chain.

Draw a large picture of the little tern or any other sea creatures you choose to produce a belly book for. Choose a food chain with only three levels in it.

Draw a picture of the prey item for example the sand eel, on the bird's stomach and then a picture of what the sand eel eats on its stomach.





Cut out discs to form the flap and fold along the line (see example). Glue the flap so it hides the picture underneath and forms a lift up flap.

The flap that covers the fish should show the parts of the bird picture it covers but not the sand eel itself. Similarly the sand eel flap should show the parts of the sand eel that it covers but only by lifting the flap are the contents of its stomach revealed ie plankton.

2.12 Get Close to the Coast

Suitable for KS2

Use an Earthwalk for younger pupils or adapt the activity below as felt appropriate.

A wide range of immersing activities are described in the publications of the Institute for Earth Education and of Joseph Cornell. Purchase of these is strongly recommended and will repay the investment many times over.

A special place

You will need:

A booklet (see section 3) and pencil each

A few pairs of scissors

A "post box"

A sit-upon for each person (small waterproof mats about 40cm x 40cm)

A clipboard and paper for the poets

A selection of natural objects from the area

Blindfolds (optional)

The class should be split up into four groups with about 8 children to one adult during this activity. The group's are given an area each to use; these areas should be contiguous between the groups.

Each group goes to its allotted area; each child is given a spot of their own at least 15 metres from their nearest neighbour but within sight of their group's adult. The spot should be interesting, with plenty of variety, and comfortable. Care should be taken to ensure that children who could potentially interact disruptively are well separated from each, other possibly with the adult between them.

Sharing

After about 30 to 45 minutes, depending on the group, gather the whole class back together. Half of the class "post" their post cards into a box, the other half then draw one out each. In these pairs they first share one special place and then the other exchanging post cards at the end of the visit to the first special place. During the sharing see if the "visitor" can find the postcard view, show each other nature's treasures and other special things discovered and share the haiku if one has been written. Allow about 15 minutes in total for the sharing sessions depending on the class. The group adult should stay in their group's original location to oversee the activity.

A class poem

From each pupil collect the one word that they have chosen that best reminds them of

their special place. Chose two poets from the class who will use all of the words to produce the classes very own poem about the natural place you are visiting. Tell the poets not to add any new nouns or adjectives.

Allow about 10 minutes for the poets to produce the poem. Some really effective andstriking poems have often been produced by simply arranging the words in an order that makes sense or paints a picture of the place and its atmosphere.

You will need a fill in activity while the poets are at work. A useful activity is to get the smaller groups back together sitting in their circles with an adult. The adult then produces a series of natural objects to pass around the group. Each person in the circledescribes or says one thing about the object as it is passed round. Depending on the group you could also try to build a story about the object. The adult starts with the first line of the story and as it is passed from one person to the next, one sentence of the story is added by each person, each one picking up where the last left off.

A variation is to have all the children in the circle blindfolded, give one child an object and ask them to describe it and then pass it round the rest of the group so they can feel it and decide if it was what they expected from the description. Ask them to guess what it is when they have all handled it. A new object is introduced to the left of the first child and so it continues till they have all had a turn with a mystery object.

Performance

When the poets are happy with their work gather the whole class back together in a large circle, get them to turn around and face outwards from the circle and sit down on their sit-upons. When they are settled the teacher, sitting in the middle of the circle, reads the poem out slowly while the class looks outwards viewing the subject of the poem, the natural place they are visiting. Encourage a round of applause for the poets and the class itself and then tell them that it was so good that it deserves an encore. Read it again so that they can soak up the atmosphere of the place conveyed to them in the words that they themselves chose.