



# Whitby Headland Excavations

INFORMATION FOR TEACHERS



*Pupils practising survey and planning work.*

## INTRODUCTION

This leaflet will help teachers visiting the excavations at Whitby. It offers suggestions for preparatory and follow-up work in school, identifying cross-curricular opportunities to help pupils understand the processes of archaeology. The actual programme of activities on offer during your visit may vary due to weather conditions, health and safety implications and the nature of the work being carried out at the time. As the excavations progress the educational programme may be altered to take in significant developments.

### Significance of the site

The excavations centre on the Anglian settlement of the seventh to eighth centuries. The monastery

was founded by Hilda in 657 as a community for men and women. This period is of special significance as it was the time of the Synod of Whitby, held in 664. This was convened to reconcile the differences between the Celtic Church and the Roman Catholic Church, and thereby determine the future of the Church in England.

At least five people from the monastery became influential bishops in the early Christian Church and many members of the Northumbrian royal family are known to have been buried here. This first monastery was destroyed by the Danes in 867.

The site is archaeologically significant because it will be one of the very few excavated sites associated with a well known Saxon monastic settlement.

## UNDERSTANDING THE ARCHAEOLOGICAL PROCESS

The study of archaeology is based on investigating human impact on the environment. If there is no documentary evidence to say what happened, we rely on examining the remains of structures and earth deposits above and below ground. This is supplemented by information derived from buried artefacts and the analysis of organic materials in the soil.

To explain how difficult it is for archaeologists to piece together the evidence, you could explain to pupils that it is like trying to complete a jigsaw puzzle without all the pieces, or like trying to tell a story when a lot of the pages in the book have been removed. To fill in the missing parts archaeologists have to piece together the remaining clues. Get pupils to build up a picture using only fragments of a jigsaw or ask them to tell a story based on extracts from a story.

## CONTENTS

Understanding the archaeological process  
Page 1

Objectives of the excavation  
Page 3

Educational approaches  
Page 4

Useful resources  
Making a visit  
Page 8

Archaeologists begin by removing the top (most recent) layer, making detailed notes and deductions of what they find before removing the next layer. To explain this concept, you could examine, in a systematic way at school, the contents of a dustbin (preferably one which has been left for a few days). Get pupils to work out the order in which things have been discarded and what happened at different times. (See also 'The Dustbin Game' poster in Useful Resources section.)

The archaeological process is summed up below. Owing to limitations of space only those directly relevant to the programme at Whitby are described.



David Walmsley

*Drawing a plan through a planning frame.*

### INITIAL SURVEYING

Before excavation at Whitby begun, the site underwent a geophysical survey. This helps archaeologists identify the best place to excavate. The geophysical survey at Whitby involved two main methods - resistivity and magnetic surveys.

### Resistivity surveys

These use electrical currents to show up features below ground. Where a feature such as a wall is buried, there will be less soil to hold moisture so the ground will be drier. Dry ground generates high

resistance, surrounding ground will be damp and give lower resistance.

### Magnetic surveys

These measure minute variations in ground magnetism. Different materials have different magnetic strengths.

### EXCAVATION

Excavation involves peeling off layers to expose physical evidence. In simple terms this evidence can be divided into two forms - features and finds.

### Features

This is evidence which cannot be removed from the site such as mounds, ditches, paths, post holes, pits, graves or walls. They are used to help archaeologists work out how the site might have looked.

### Finds

These are objects which have been found on site. Objects can include skeletons, coins and jewellery, broken pieces of pottery, pieces of leather and wood, fragments of animal bone, and sea shells. They are recorded exactly where they were found before being taken away for further examination. This is important as it helps show what activity might have happened there, often giving information about lifestyle, available materials, and trading networks.



David Walmsley

*Before beginning the next level of an excavation the top surface is recorded using drawings and photographs. Whole features and individual finds need to be carefully recorded.*

### RECORDING INFORMATION

To ensure that all finds and features tell us as much information as possible, especially before they are removed, it is very important to record where they were found and the level at which they were found. A survey is therefore made, locating the exact position of all features and finds. They are recorded using three main techniques: drawing, photography and written notes.

### Drawing

The position of all features and finds is plotted onto a plan of the site. A planning frame, divided into smaller squares with string, is used to help make the drawings accurate. After a plan has been drawn half of the feature will be excavated to give a cross-section. This is also drawn, noting any changes in soil conditions.

### Photographs

These are systematically taken throughout the excavation. They record different layers before they are removed, features and finds before and after they are excavated and general views of the site. A small feature and find will have a ruler beside it to show its size, a larger feature will have a metre rod with red and white marks, called a ranging rod, next to it. Slides as well as black and white prints are taken.



David Walmsley

## Written records

These are kept throughout the excavation. All layers and features are given an individual number, called a context number. Each layer or feature is recorded on a separate sheet called a context recording sheet. This sheet holds information about where it was found, its shape and size, and the colour and texture of the soil.

## PROCESSING FINDS

Different processes are needed depending upon the condition, material and type of the find.



*Finds being carefully washed.*

## Cleaning

Robust finds such as pottery or stone will be washed, scrubbing gently with a soft toothbrush. More delicate finds may only be brushed. Very fragile finds such as metal, leather or textiles need very special cleaning (without using water) and conservation to preserve them. This often means they need to be sent immediately to laboratories.

## Marking

As soon as they are cleaned, the finds are given a number, marked in permanent ink which shows where they came from. Without this identification number the information which finds can tell us will be limited. The finds are then drawn or photographed.

## Sorting

Finds can then be sorted into different types, like brick, tiles, pottery or coins. Each will then be sent to specialists who will study them further for more information about the site.

## Packaging

After sorting, all finds will be packaged to protect them and prevent further deterioration as a consequence of damp, exposure to air, bacteria or changes in temperature.



*Excavated artefacts which have been processed and bagged on site.*

## SOIL SAMPLING

Sometimes a sample of soil is taken to be examined more closely. Particles within it can show what crops were cultivated, what plants and herbs were grown, what foods were eaten, what animals were kept, what trees were grown and what type of wood was used for buildings. This information is collected through sieving.

## Dry sieving

This is used to retrieve small remains which might have been missed during excavation, such as small animal and fish bones, and marine and nut shells. Dry sieving usually involves shaking soil through a wire-meshed sieve.

## Wet sieving

This is often called flotation, since it involves mixing water with the soil. The soil sinks to the bottom and the fine organic material floats to the top. This method is used to retrieve material such as seeds, pips, pollen, grain, insect remains, charcoal and mollusca.



*An excavation may destroy evidence in order to reach lower levels. In which case all the evidence needs to be recorded in detail before it is removed.*

## AIMS OF THE WHITBY EXCAVATION

Before any excavation begins, a project plan is drawn up, setting out the aims. At Whitby these aims are:

- to increase our understanding of the nature and extent of the Anglo-Saxon settlement on the headland
- to give a better understanding of the development of Whitby Abbey
- to examine the development of burial rites and customs through investigation of the cemetery
- to use the information which the excavations reveal to develop a strategy for managing this important religious site and to protect any remaining archaeology.

## OBJECTIVES OF THE WHITBY EXCAVATION

To help achieve the above aims a number of objectives are defined. These explain what the excavation team will actually do. The following extracts are taken from the project plan, and will help teachers in their preparatory work. The language has been slightly modified to help pupils understand, but you may need to modify the language further.

'Test pits will be dug to help work out where excavations should take place.'

'Before beginning the excavation the whole area will undergo a geophysical (resistivity and magnetometer) survey and a metal detection survey.'

'The whole site will be divided into a grid with pegs to help mark the coordinates.'

'The upper soil level will be removed by a mechanical excavator using a flat edged bucket so that sections of archaeology are not gouged out by the machine teeth. The ground surfaces exposed by this machine will then be cleaned by hand using hoe and trowel.' *(This is to prevent top soil from getting mixed up with the older, lower levels.)*

'The burials will be excavated under the supervision of an osteologist who will advise on the lifting and processing of the remains. DNA analysis of teeth will find out the sex of human remains and how many of people may have been related.'

'A number of one-metre squares will be randomly selected to identify plant remains and phosphates. A limited number of pollen samples will be taken from major features.'

'Bulk samples will consist of a minimum of 40 litres of soil. Any artefacts amongst the soil will be removed unless the removal will harm the artefact. If fragile artefacts are removed, these will be labelled with the context number and sample number.'

'Minimum sieve sizes will be used to recover certain materials from samples. The minimum sizes are:

- charcoal: not less than 4mm
- brick and tile: not less than 10mm
- plaster and mortar: not less than 10mm
- oyster shell: not less than 10mm
- other marine shell: not less than 4mm
- bone fragments: not less than 2mm.'

'All pottery will be washed, marked and bagged by context.' *(Context is the precise position and level where something was found.)*

'All features and layers will be given their own numbers. These are called context numbers *(the precise area and level where they were found)*. They will aid the location of finds and samples.' *(Features and layers are a part of the site, whereas finds, and samples are able to be removed.)*

'All drawings will consist of plans drawn at a scale of 1:20, and sections drawn at a scale of 1:10.' *(Plans show what is on the ground surface; sections show what the different layers below.)*

'All features, structures and layers will be photographed.'

'Regularly up-dated information will be provided, explaining the archaeological process and the exposed remains to the public.'

'The project will be a six year programme. Excavations will take place between years one to four. Archive work, assessment and report-writing will take place between years four to six.'

'A fieldwork team will be recruited.'

Use these statements to help pupils appreciate that excavations are carefully planned in advance. There are set procedures, requiring different skills and processes. Photocopy this list and cut up into sections. Then, ask pupils to reassemble the statements in order of intent. Or, you could get pupils to rewrite the programme as a flow chart in their own words. Ask them to extract from this list what skills and processes will be needed to set up the excavation.

Pick out key words/terms which need clarification and get pupils to make a glossary. They will be able to use some of these terms when 'interviewing an archaeologist' and

to understand the language which he/she may use.

Give pupils one or more statements and ask them to imagine themselves as an archaeologist at Whitby and ask them why they need to do this, what skills they will need to use, and what information this might provide.

## EDUCATIONAL APPROACHES

Archaeological excavations are an exceptional educational resource. Primary schools will recognise the cross-curricular potential of a visit. The following educational approaches are linked to a range of activities which may be on offer at

the time of your visit. Suggestions are given for preparatory and follow-up work in school.

## ARCHAEOLOGY

### Preparation in school

#### What is archaeology?

Explain the archaeological process using the loan collection of slides or the list of objectives on this page. Ask pupils to work out what people are doing in the pictures and the function of tools and objects. This will give pupils background knowledge about the excavation process and help them understand what they will see during their visit.

### **A slice of archaeology**

Use a fish tank or jar to produce 'a slice of archaeology'. Fill it with different coloured sand, earth, gravel, pebbles, and a few small objects such as coins, pieces of pottery, fragments of bones, to build up layers of earth with finds. Ask pupils to work out the sequence of different layers and then to devise a story behind the different layers. A layer of charcoal could mean a fire, a layer of pebbles could be a road, a layer of sand could indicate a sand storm, a pile of brick and tile could mean house demolition. When the slice is complete 'dig a post-hole' and fill it with different coloured material to show how archaeological features are created. Explain also that worms and rabbits could alter the stratigraphy by their movement and disturbance of soil.

### **What happened first?**

Discuss how archaeologists build up a picture of the past by looking at the different deposits in the ground and working out what order things happened, the earliest usually being lowest. Explain that archaeologists draw sections to show different layers. Get pupils to

draw a section if they have made their own 'slice of archaeology' or use the stratigraphic cross-section (available on short-term loan).

### **The time line**

Produce a time line with equally sized sections (like a huge ruler marked in years). Stick a photograph of the class at the end of the time line. Get pupils to attach images or written facts about significant personal events.

If your visit is part of a local study you should create a time line showing the history of the site (use the time line in the free teacher leaflet for the abbey). Highlight the period of the excavations and include photographs, drawings or pupils' accounts to place the excavations in chronological context.

### **On-site work**

Take photographs on site. These will not only be useful for follow-up work but can form part of a display about archaeology. Rather than take random images, get pupils to concentrate on specific aspects of the excavation. These could include tools and machinery used on site,

different processes of an excavation, dangers and working conditions, and ways of recording information.

While on site or in view of the excavations ask pupils to describe particular features, excavation areas and archaeological processes they have seen, and activities which they have experienced.

### **Follow-up work**

An immediate follow-up activity could be to ask pupils to work in groups to produce their own research design, setting out what they would like the excavation team to achieve, and how it would be undertaken. Other activities which help pupils communicate their understanding of archaeology and their visit are integrated into other subjects.

Use the chart below to help pupils understand the variety of jobs, the different tasks and the necessary skills required in an excavation. Delete sections before photocopying them and distributing to pupils to fill in, either on site or as part of work in school. You can also use this chart to help pupils devise questions when interviewing an archaeologist or for follow-up work.

## **THE EXCAVATION TEAM**

<b>Position</b>	<b>Duties</b>	<b>Qualifications</b>
a site director	in charge of all the digging work able to plan ahead manage different groups of people	lot of fieldwork experience knowledge of the particular period ability to organise a workforce
a site training supervisor	in charge of training all volunteers, students and trainees	able to give clear instructions offer help and monitor progress
an outreach supervisor	deal with schools and visiting groups give lectures and demonstrations	outgoing, friendly and able to adapt to talking to different groups
a finds supervisor	know what to do with different materials identify and describe objects work out age of finds	organised patient and methodical good writing skills
a survey supervisor	in charge of all recording able to use technical and IT equipment	observe and draw carefully use maps and plans
assistants	excavation work	have digging experience work as part of a team willing to do manual, and often dirty, work
trainees	assist with excavation work	enthusiasm willing to learn and do manual, and often dirty, work

## SCIENCE

### Preparation in school

#### The rubbish detectives

Archaeologists dig up rubbish to see what it can tell us about the past. However, what is dug up does not often give complete information. It only gives us clues. These need to be assembled to build up a clearer picture, and in some cases these pictures may be different. Explaining this process will help pupils understand that our views of the past are open to interpretation.

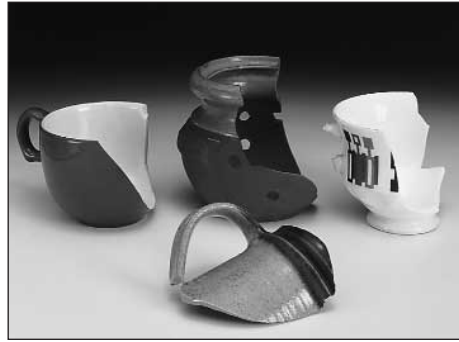
Reinforce this concept by collecting a selection of modern domestic rubbish such as food packaging, old letters, magazines and plastic containers. Give groups of pupils the rubbish and ask them to work out what they can discover about the people who lived in the house. Ask questions such as how many people lived in the house, how old might they have been, how wealthy were they, did they have a healthy lifestyle, what did they eat a lot of, did they have any pets, what did they do in their spare time, and what were their occupations.

Follow this up by discussing how much of this rubbish would remain if it had been buried for 300 years. Identify which materials would no longer be there and explain why.

#### Complete the picture

Archaeologists find a lot of objects which are broken or incomplete. However, they can still provide useful information. Demonstrate this with pupils by collecting pictures from magazines, cutting sections out and gluing them to paper. Get pupils to draw what the picture would have looked like. Or, give pupils pieces of broken objects and ask them to draw or describe what they would have looked like. Get them to estimate the original length, width, diameter, shape, colour, decorative pattern and function. Repeat this exercise using

an unknown object. Afterwards, compare drawings or descriptions to help pupils realise how we can make different interpretations based on the same evidence.



*Practise deduction skills by asking pupils to work out what objects would look like when complete.*

#### Classifying objects

This activity promotes observation skills, develops descriptive skills and also helps pupils analyse the evidence which objects can give. Collect a range of common objects. Use hoops to sort them into sets depending on predetermined criteria such as material (ceramic, glass, wood) or function (defensive, domestic, religious or industrial use). Or, ask pupils to decide on the groupings themselves. Overlap the hoops like Venn diagrams to allow for objects which could appear in more than one category. Then, move on to archaeological artefacts. If objects are not available use pictures or words. This exercise could also be a follow-up activity.

#### Looking for differences

This task teaches pupils the importance of accurate drawing. Divide the class into pairs. Give each pair a common object such as a potato, leaf, crayon or piece of stone. After close examination ask each pair to write a detailed description of it. The aim of the exercise is to describe the object so well that when pairs swap descriptions they will be able to identify the exact potato or leaf which the descriptions refer to.

#### Describing objects

Archaeologists need to be able to observe and describe things very

carefully, either by writing factual descriptions about artefacts or features, or describing them orally. This helps to work out what objects were used for. To practise this in school divide pupils into pairs and give each a different object (such as a toothbrush, key, shoe or torch) which they must not show to their partner. Get each pupil to write a description of the object without using its name, or saying what it is used for. Then swap descriptions and ask pupils to draw the objects according to the description which they have been given. Afterwards, allow pupils to examine each other's drawings and amend their descriptions to help their partner do a more improved drawing.

#### On site

Pupils will be given a brief talk and demonstration on what happens to finds, then divided into small groups or pairs for further work. They may be given a mystery object and will need to 'ask' questions about the object to see if they can work out its original use.

Alternatively, pupils may be presented with the results of soil analysis or samples of organic materials and helped to determine the information which it can tell us.

#### Follow-up work

This will depend upon pupils' experiences during your visit. Nevertheless, for more generic work you could ask pupils to:

- write out a manual for volunteer archaeologists, describing tasks such as what they should do if they discover an artefact
- report the discovery of a major find or feature from the site. Get pupils to describe how it was found and the state it was in, and how it was carefully revealed, cleaned, conserved, and processed. How might it be shown to the public?
- use the environmental remains to look at eating and cooking habits.



*Pupils washing and sorting finds.*

Adapt recipes for site open days or special events. Compile an Anglo-Saxon menu which could be cooked on site. Decorate the menu with Anglo-Saxon ornament.

### ENGLISH

On site you will be given a site tour and an opportunity to interview an archaeologist. This will provide a stimulus for various forms of writing such as surveys, progress reports, diary entries, letter-writing, articles for magazines, press announcements and promotional material.

#### Preparation in school

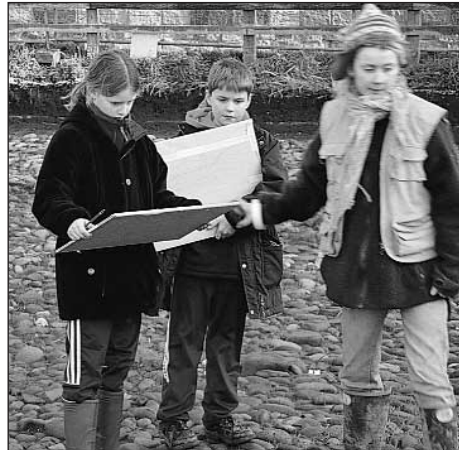
Plan your questions in advance. Divide pupils into groups and get them to work out a series of questions about different aspects of the life and work of the archaeologist. Tell pupils that they only have time to ask a limited number of questions and will therefore need to select those questions which will generate the most information. Take photographs to illustrate any follow-up articles in a school newspaper or a newsheet about the excavation. You could even get pupils to become TV crews, videoing the interview.

#### On site

The tour will explain the history of the site, the visible archaeological

features and the work of the archaeologists. Afterwards, pupils can interview an archaeologist.

While pupils can still see the site ask them to describe, using brief notes or lists of words, their own experiences and observations of an archaeological dig. Encourage them to use their senses - I see - I hear - I smell - I touch - I feel, for creative writing.



*Interviewing an archaeologist.*

#### Follow-up work

The information gathered during your visit could be used to:

- write a newspaper article about the work of an archaeologist
- produce a job specification for an archaeologist's assistant. Outline what skills are required, the expected working conditions and the anticipated rewards
- write a diary entry imagining what either a senior archaeologist or an archaeological assistant might have written. A senior archaeologist might write about the day's proceedings, the weather conditions and its effect on the site, how different people were deployed, what their tasks were, and what they hope to achieve at the end of the day. A more junior member of the team might have a very different diary entry
- perform a short role play about the discovery of a treasure hunter on the site. Get pupils to consider why is it not allowed, what harm could be done and how can we discourage such activity

#### Children's archaeological panel

Tell pupils that as part of an exhibition in the visitors' centre they are asked to design a panel to explain to other children the excavations at Whitby. The aim of this panel is to explain to the public that the future of the historic environment begins by helping children understand the value of our heritage, and that future decisions will be made by these children, when they become active citizens.

- write a radio advert or design a poster announcing an open day for the excavation explaining to the public what they might expect to see and how to apply for a visit.

### MATHS

Archaeologists use many processes involving maths. On site, your pupils may see the excavation team measuring, estimating, surveying, making scale drawings, plotting finds or drawing cross-sections.

#### Preparation in school

##### Scale drawing

Archaeologists usually draw at a scale of 1:10 or 1:20. The planning activity on site will be at one of these scales. Practise this by getting pupils to draw their fish tank or jar at a reduced scale. If pupils have not made one, get them to draw a range of objects at different scales.

##### Plotting finds

The exact position of any excavated finds needs to be recorded on plans. These plans cover the whole area of the excavation which is divided up into a grid. Plotting finds helps archaeologists work out what different areas might have been used for and what happened there.

Plotting the position of finds uses coordinates. Practise using them in school by getting pupils to grid up a plan of the classroom or school

and record the position of different objects. Or, as a paired activity get one pupil to superimpose a grid over a plan of one of the rooms in the school without the other pupil seeing. The other pupil has a blank grid and when he/she calls out a coordinate the pupil with the plan describes what is inside the relevant square. Eventually, sufficient clues will help the pupil with the blank grid to work out what is in the room and therefore what it might be used for.

### Surveying the school

Make a plan of a familiar area (such as the classroom or playground). Ground plans can be created by using non standard measurements such as paces, or using standard measures such as metre rules or measuring wheels.

### On site

Pupils may be provided with a planning frame, planning board mounted with blank drawing sheets, over a base plan, drawing materials and 30m tapes. The base plan has one square missing. Pupils have to locate the missing square and draw in the missing elements at a reduced scale.

### Follow up work

The incidence of different types of finds can be recorded using graphs. Depending on the information available at the time pupils could present archaeological information using pie charts or block graphs.

## MAKING A VISIT

### Visiting arrangements

Visits will be coordinated by the on-site team. Schools are able to visit from 10-12.30 approx. You are free to use the abbey for your own planned work afterwards.

### Booking Procedure

Visits for schools are free and must be booked two weeks in advance. Contact: Education Bookings at the

Regional Office. Please do not contact the site direct.

### Familiarisation visits

These will be arranged to familiarise teachers with the excavation, clarify on-site arrangements and offer activities to help prepare for the visit.

**Maximum party numbers:** 35 with an adult:pupil ratio of 1:10. For practical work school parties will be subdivided into smaller groups of approx 12.

### Safety

As the excavation is a working area safety precautions are essential. You must ensure that pupils do not run, climb spoil heaps, touch machinery, play with water or interfere with archaeological procedures. All helpers should be thoroughly briefed. Staff and pupils need to wear suitable clothing and strong footwear.

### Weather

Any archaeological excavation is dependent upon weather conditions. This will also affect the educational programme.

### USEFUL RESOURCES

Free resources are available for loan from the site. These include:

- a collection of slides, with teachers' notes, on the processes of archaeological excavation
- a stratigraphic cross-section showing soil layers and deposits
- a generic collection of finds (not specific to Whitby).

### Books for teachers

*Archaeology in the English National Curriculum*, edited by Don Henson, 1997, English Heritage/Council for British Archaeology, ISBN 1-872414-67-2.  
*Teaching Archaeology*: a UK Directory of Resources, 1996, ISBN 1-872414-66-4.

The Shire Archaeology Series contains a number of accessible booklets on various aspects of archaeology.

### Books for pupils

Cork, B & Reid, S. *The Usborne Young Scientist*, Archaeology, Usborne, ISBN 0-86020-865-6.  
Place, R. *Clues from the past*, Wayland, 1993, ISBN 0-7502-0677-2.

### Posters:

*Archaeology Detectives Poster Games*, English Heritage, Four A3 Posters.

### Videos: (available on free loan)

*Archaeology at Work - Looking for the Past/Uncovering the Past*, English Heritage, 58 mins. Suitable for KS2 & 3.  
*The Archaeological Detectives*, English Heritage, 1990/1, 79 mins. Suitable for KS2. Four entertaining and exciting videos.

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