BRONZE AGE BRESSAY

Education Pack
Bronze Age Bressay!

Education Pack

Written and compiled by Esther Renwick

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1. Introduction

Bronze Age Bressay is an innovative community project that provides a unique insight into the burnt mounds which are found throughout Shetland. The reconstructed burnt mound at the Bressay Heritage Centre provides an opportunity to investigate life in Bronze Age Shetland, discover some of the processes of archaeology and explore current issues such as climate change and recycling.

This education pack has been produced to work with the Curriculum for Excellence and provide cross-curricular activities and resources suitable for use with a wide range of age groups and abilities. It has a clear focus on engaging, active and cooperative learning. The pack is designed to work with the Bressay burnt mound, but is also relevant to studying virtually any archaeological site or time period. The activities all work on their own, or the pack used as a whole forms a complete cross-curricular archaeology project. This pack is available on CD-ROM and online.

It is accompanied by a CD-ROM of images which can be used as classroom resources and are freely useable for educational and non-profit making purposes. Please acknowledge images used outside of the classroom as ‘© Bronze Age Bressay’, ‘© Billy Fox Photography’ as appropriate.

It is also accompanied by a DVD which contains a slideshow of images from the project and sound bites from a number of the key individuals involved. It provides an introduction to burnt mounds and some of their possible interpretations. This is also available online as a Flash player file and as a podcast.

Due to the nature of Shetland schools which commonly feature mixed classes of different ages this pack has been designed to be flexible and work with a variety of ages and abilities. Most activities can be used, with some simple adaptation, across much of the primary curriculum as well as for S1-3. The classroom section of the education pack has been structured in three distinct sections:

- **Burnt Mound Experiments** are designed to be suitable for most ages and provide an interactive approach to the questions raised by the burnt mound. These all relate to possible interpretations of the use of burnt mounds and are easy and fun classroom experiments to stimulate creativity and discussion.

- **How Does Archaeology Work?** is also aimed at a broad range of ages. Although mainly focussed on P6-7 and S1-3, the activities can be easily simplified to suit younger or mixed age groups. They are designed to explore the way in which archaeologists work with evidence, and introduce concepts of chronology and stratigraphy.

- **Our Heritage** is mostly aimed at P6-7 and S1-3 but can be adapted for younger or mixed ages. These activities focus on how we as responsible citizens preserve and present our heritage, particularly in the face of climate change.

- **Understanding the Burnt Mound** is designed to be used in direct relation to a site visit (although much of it can also be done in the classroom).

In the Bressay Heritage Centre there is a pack available for use in reconstructing the layout of the burnt mound in much the same way as the archaeologists did (see the “Understanding the Burnt Mound” section). This encourages a hands-on approach to the process of reconstruction and an understanding of the need for accurate recording. It links with the themes of experimentation, interpretation, and heritage preservation, management and presentation which run through the classroom activities.
2. The Bressay Burnt Mound Project

The Bressay Burnt Mound project first involved the excavation of Cruester burnt mound by EASE (Environment & Archaeology Services Edinburgh) Archaeology in October-November 2000. In 2008, with the aid of funding and expertise from SCAPE and Archaeology Scotland, the mound was re-excavated and moved stone by stone from its original location, where it was being badly eroded by the sea. It was then carefully reconstructed on its current site, beside the Bressay Heritage Centre.

2.1 What is a burnt mound?

Burnt mounds are fairly common across Britain and Ireland and are generally dated to the Bronze Age (c.2000-800BC). They consist of mounds of burnt and shattered stones, usually near a water source. There are many burnt mounds visible in the Shetland landscape and those excavated to date have proved to be unusually complex, containing the remains of buildings within the mound.

Before excavation the site at Cruester was visible as a large mound measuring approximately 20m in diameter and 2m high with one side eroding into the sea. On excavation it proved to contain two stone flagged passageways with small cells, or rooms, opening off to each side of them. At the end of one of the passageways was a tank measuring 1.1m x 1.6m x 0.6m and capable of holding approximately 868 litres (or 193 gallons) of liquid. A cell at the other end of the passage contained a hearth, presumably where the stones were heated. The site has been radio-carbon dated to late in the 2nd millennium BC. The whole structure is very similar to that found when Tangwick burnt mound (Eshaness) was excavated in 1996.

Broadly speaking burnt mounds are interpreted as sites where stones were heated and then used to heat water, but what they were for is uncertain. A number of theories have been suggested to explain their use, including:

- Bathing
- Brewing
- Cooking
- Fulling cloth
- Tanning leather
- Saunas

More information on these can be found in the appendix and on the DVD/podcast.

2.2 Where was the burnt mound?

The Cruester burnt mound was originally located on the north west coast of Bressay, on the lower slopes of the Hill of Cruester by the edge of the sea (grid ref HU48154231). A location plan can be found in the appendix.
3. Visiting the Bressay Burnt Mound

The reconstructed burnt mound is located beside the Bressay Heritage Centre, approximately 100m from the ferry terminal. Access is not permitted into the burnt mound itself, however there is an interpretative panel located beside the mound and access all around the outside gives a clear view of the site. There are reconstructions of the hearth cell and tank on site, which are often used for experimental archaeology work during the summer months. These can be accessed with care. Children must be well supervised and not allowed to climb onto any structures for their own safety.

Groups do not need to book, but if wishing to use the archaeology pack kept in the heritage centre it is advisable to phone in advance to ensure you do not clash with another group wanting to use these resources.

3.1 Travel

It is advisable to phone 01595 743974 in advance for up to date ferry information. You can visit http://www.shetland.gov.uk/ferries/timetables.asp for the current ferry timetable.

3.2 Facilities

Parking and toilet facilities are available all year around beside the ferry terminal. Toilet facilities are also available within the Heritage Centre.

Lunch cannot be eaten within the Heritage Centre, but if the weather is poor then drawing or writing activities can be done inside at the discretion of the Heritage Centre Custodian.

The Heritage Centre houses displays about culture, history and geology on Bressay as well as featuring a permanent exhibition about the burnt mound project. The DVD accompanying this pack also runs in the centre.

Admission to both the Heritage Centre and the reconstructed burnt mound is free. There is a small shop within the Heritage Centre.

Heritage Centre opening times 2011:

May-September
Tues, Wed, Fri, Sat 10am-4pm
Sun 11am-5pm

Contact:
bressayheritage@btinternet.com
01595 820750.
4. Suggested activities

4.1 In the classroom

4.1.1 Burnt mound experiments

No-one knows exactly what burnt mounds were used for. They are large piles of burnt stone, some of which also have tanks, kilns or hearths and small rooms associated with them. Archaeologists believe they are evidence for stones being heated and then used to heat liquid. At Cruester the stones may have been heated in a hearth cell at one end of the mound and then rolled down a slope into the large tank at the other end.

The following pages contain some quick and fun experiments and activities, suitable for a range of ages, to investigate the properties of hot stones and what they could have been used for. All the experiments are cross-curricular and directly related to existing theories on the use of burnt mounds.

Due to the tendency of stones to explode when heated dried pulses are used in these activities as a cheap and safe alternative.

Activities and subject links

A) Heating water
Social Studies, Technologies, Sciences

B) Dyeing wool
Social Studies, Technologies, Sciences, Expressive Arts

C) Making felt balls
Social Studies, Technologies, Sciences, Expressive Arts

By their nature all of these activities involve hot liquids — please ensure that pupils are wearing protective clothing (e.g. gloves and aprons) where appropriate and are closely supervised at all times. You may need to choose activities carefully or adapt them slightly if working with younger children.
A) Heating water

The purpose of burnt mounds appears to have been linked with heating stones in a hearth or kiln and then using them to heat a tank of liquid.

As part of the Bronze Age Bressay Project a hearth cell and tank were reconstructed for use in experimental archaeology, to explore the way in which the site could have been used. The first experiments involved heating stones in the hearth, adding them to the water in the tank and recording the temperature in order to see how effective stones are at heating water.

This experiment looks at the same problem in the classroom, using dried pulses rather than stones (since stones have a tendency to explode when heated).

Experiences and outcomes

This activity explores the way in which evidence can be used to create experiments to help us gain a greater insight into past lives. It covers a wide variety of learning outcomes, including:

Social Studies
SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC4-01

Sciences
SCN1-04a

Mathematics
MTH2-21 – MTH4-21

For this activity you will need:

> Dried pulses (e.g. kidney beans*)
> Water
> Microwave (or oven)
> Microwave/oven safe container
> Jug or beaker
> Thermometer
The fire and the tank produce a lot of smoke and steam and the stones often explode; the burnt mound must have been a very hot, smoky, steamy and dangerous place to work.

How many stones might you need to heat the tank?

How does this affect what the tank could have been used for? (Hint - consider the displacement of water caused by adding the stones).

What might it be like to be inside the burnt mound when it was roofed as stones were being heated in the hearth cell and then pushed down the slope into the tank?

What other methods of heating would be available to the Bronze Age people of Shetland, and what are available to us today?

How does heating rocks in a hearth cell differ from heating beans in a microwave?

Discuss the role of experiments in interpreting archaeological sites, both in terms of understanding what the site was used for, and in presenting and explaining the site to the public.

**Instructions**

Heat the pulses in the microwave*  
(30 seconds is generally adequate for a handful of kidney beans).

Add to a measured amount of water and record the temperature rise.  
(For a handful of kidney beans you will need only about 100ml of water to see a radical rise in temperature.)

*Dried kidney beans do survive heating and then immersing in water but can only be used once or twice before beginning to deteriorate.

Suggestions for discussion / extending the activity

How many stones might you need to heat the tank?

How does this affect what the tank could have been used for? (Hint - consider the displacement of water caused by adding the stones).

What might it be like to be inside the burnt mound when it was roofed as stones were being heated in the hearth cell and then pushed down the slope into the tank?

What other methods of heating would be available to the Bronze Age people of Shetland, and what are available to us today?

How does heating rocks in a hearth cell differ from heating beans in a microwave?

Discuss the role of experiments in interpreting archaeological sites, both in terms of understanding what the site was used for, and in presenting and explaining the site to the public.
B) Dyeing wool

Processes such as felting, fulling and dyeing textiles were all technologies available to the Bronze Age Shetlanders. It has been suggested that burnt mounds may have been used for activities such as these since they all involve the use of hot water.

Experiences and outcomes

This activity explores the way in which evidence can be used to create experiments to help us gain a greater insight into past lives. It can work with almost any age group and covers a wide variety of learning outcomes, including:

Social Studies
SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC4-01

Technologies
TCH2-01b, TCH4-01a, TCH3-10c, TCH1-11b, TCH2-11b

Sciences
SCN2-15, SCN2-16, SCN3-17, SCN3-19

Expressive Arts
EXA1-02 - EXA4-02, EXA1-04 - EXA4-04

Mathematics
MTH2-21 – MTH4-21

For this activity you will need:

> Approx. 25g of sheep wool per pupil for each dye used (bought or gathered)
> Protective gloves and aprons (optional)
> 10 tea bags* per 100g of sheep wool and/or 100g of onion skins* per 100g of sheep wool
> Water
> Kettle
> Saucepans
> Bowls or plastic containers
> Sieve
> Large sheets of paper
> Pencils, felt pens etc

* Teabags and onion skins are easily available dye sources that create bright colours without the use of a mordant, but you can experiment with different dyes. Obviously tea would not have been available to the people of Bronze Age Shetland!
The tank in its original location at Cruester.

**Instructions**

Divide the class into groups so that each can dye a piece of wool using natural dyes.

Boil the dye (e.g. 10 teabags) in 2 pints of water.

Simmer for 15 minutes, stirring occasionally (if using tea bags make sure you squash the tea bags well when stirring).

Strain the mixture and keep the liquid.

Soak the wool in the liquid for at least 15 minutes.

Create a wall chart to explain the process and display the results.

*Acid dyes are not harmfully acidic, the name comes from the vinegar (acetic acid) which is used to set them.*

**Suggestions for discussion / extending the activity**

Research and discuss and experiment with dyes available to the people of Bronze Age Shetland.

Heat a small amount of the dye using your heated pulses, as in the ‘heating water’ experiment. Discuss whether this would be a plausible use for the burnt mound.

Investigate the difference between natural and chemical dyes (acid dyes* are available from several online suppliers if you want to try some comparisons).

The wall chart you create can be as simple or complex as you wish. It can consist of anything from a basic chart with samples of the different dye results to a more sophisticated chart with samples of the dyes left on for differing lengths of time, on different colours of wool and on wool from different breeds of sheep. You can experiment with further natural dyes. Graphic representations can also be used to show the variables of the experiment.

The samples you produce can be used in the following felting activity. If you wish to do this then you will need to use dyes such as the onion skins or tea (which need no mordant) or add a suitable mordant (such as vinegar) to prevent the dye washing out during the felting process.
C) Making felt balls

Processes such as felting, fulling and dyeing textiles were all technologies available to the Bronze Age Shetlanders. It has been suggested that burnt mounds may have been used for activities such as these since they all involve the use of hot water.

Experiences and outcomes

This activity explores the way in which evidence can be used to create experiments to help us gain a greater insight into past lives. It can work with almost any age group and covers a wide variety of learning outcomes, including:

Social Studies
SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC4-01

Technologies
TCH2-01b, TCH4-01a, TCH3-10c, TCH1-11b, TCH2-11b

Sciences
SCN2-15, SCN3-17

Expressive Arts
EXA1-02 - EXA4-02

For this activity you will need:

- Approx. 25g of sheep wool per pupil (gathered or bought)
- Protective gloves and aprons (optional)
- Hot water
- Bowls
- Washing up liquid or liquid soap
- Old bath towels (one per group)

Felting is a simple and effective way of producing a textile; it has been used for thousands of years and is still used today.
Instructions

Allocate each group a large bowl of hot (but not scalding) water with a squirt of liquid soap added and give 25g of wool to each pupil. Ideally stand the bowl on an old bath towel as this can be a very wet activity!

Wool should then be wound into a rough ball shape. It will shrink a lot as it felts so needs to be made considerably larger than the intended ball. Any number of layers and colours can be added at this stage (make sure extra layers are added at the start, it will not work once the ball has started to felt).

Dunk ball into soapy water, squeeze and roll between hands until it begins to shrink and felt.

Water may need to be replaced periodically when it begins to cool too much.

Keep on working it until it is a smooth, firm ball. Change the water if it starts to cool down too much as hot water is more effective for felting.

Rinse soap out and squeeze to get rid of excess water.

Leave to dry naturally.

Suggestions for discussion / extending the activity

Discuss the properties of felt and the use of this textile in the past.

Heat a small amount of the water using your heated pulses, as in the ‘heating water’ experiment, and use it for felting. Discuss whether this would be a plausible use for the burnt mound.

Depending on size, the felt balls can be strung together to make jewellery, decorations, mobiles etc. If made large enough (tennis ball sized—this needs a generous amount of fleece) they can be used as balls to play games with.

Balls can also be made up of different layers of colour then sliced in half, when dry, to expose the rings of colour.

The balls can be threaded on a string to form a timeline, including the Bronze Age, and used as part of a classroom display.
Most of the information we have about the burnt mound at Cruester comes from archaeological excavation. The site was excavated by EASE Archaeology in 2000 as the mound was being badly threatened by coastal erosion.

This section contains a variety of cross curricular activities to illustrate the way in which archaeological evidence is gathered, analysed and interpreted. These activities can be adjusted in complexity to suit most age groups.

**Activities and subject links**

D) The evidence bag game  
Social Studies, Sciences

E) The rubbish game  
Social Studies, Sciences, Expressive Arts

F) Understanding stratigraphy  
Social Studies, Mathematics

G) Looking at pottery  
Social Studies, Mathematics
D) The evidence bag game

This activity is designed to illustrate the challenges faced by archaeologists working with limited evidence and raise questions about recording, preservation and interpretation.

Experiences and outcomes

This activity explores the way in which archaeologists use evidence to help us gain a greater insight into past lives. The learning outcomes are mainly from:

Social Studies
SOC1-01, SOC1-03, SOC3-01, SOC4-01

For this activity you will need:

> Several large sealable clear plastic bags or large brown envelopes

> Contents - select a range of contents that might represent the contents of someone's pocket or bag. According to the class the selection of items can make interpretation easier or more difficult. For instance you can give each bag a distinct gender/age etc bias, or make the evidence non-specific or even contradictory to stimulate more discussion with older pupils.

The evidence bag can contain anything at all, so long as the contents suggest something about the life of the person who owns them.

Instructions part 1

Explain to pupils that archaeologists work in a similar way to police or forensics teams reconstructing a crime. They gather evidence and then make deductions and interpretations that help them to reconstruct what happened.

Produce the 'evidence bags' and explain that each contains the personal effects of a person who they need to know more about. They are the contents of handbag/pockets etc.

Empty out the bags (you could allocate one bag per group) and ask pupils to work in groups to try to answer the following questions using this evidence: Were they young or old? Male or female? Do they have a family/pets? What sort of job do they do? Anything else the evidence tells us?

Discuss the answers from each group and the problems of working with the evidence.

Discuss what we can tell about the society that these people belong to — Technology? Money? Family groups? Literate? Aesthetic taste?
Discuss the fact that this is the type of evidence archaeologists are working with; most of the evidence has decayed and they are left with fragmentary clues to life in the past.

An extension, or alternative, to this activity can consist of asking each pupil to gather their own ‘evidence bag’ which contains clues about themselves in objects but uses no words and then other members of the group/class can try to identify the correct pupil from their bag.

Alternatively pupils can use these concepts to create their own time capsule, looking at the properties of the materials they are incorporating to work out what would survive well into the future, as well as what you could tell future archaeologists.

Instructions part 2

Now imagine the contents of the bags have been stolen, the money removed and the rest dumped in a ditch where it is not found for 1,000 years. What would survive? Try to answer the questions about the owner of the bag and about the society again with the surviving evidence.
E) The rubbish game

This is a variant on the “evidence bag” game, building on the concept of using evidence and adding in the concepts of stratigraphy and chronology.

**Experiences and outcomes**

This activity explores the concept of chronology and the way in which archaeologists use evidence to help us gain a greater insight into past lives. It can work with most age groups, depending on the material and the complexity of recording method chosen. It covers a variety of learning outcomes, including:

**Social Studies**
SOC1-01, SOC1-03, SOC3-01, SOC4-01

**Expressive Arts**
EXA1-04 - EXA4-04, EXA3-04

**For this activity you will need:**

> Several bin bags or clean waste paper bins.

> Assorted (clean and non-hazardous) rubbish split between the bins/bags representing different people and/or families. Imagine what different families might use in a few days and throw away. Choose harder/easier clues to the families depending on the age/ability of the class. Alternatively you can collect your own rubbish for a few days and bring that in and see what it would tell them about you if they didn’t know you.

> “Finds recording form” and “Scale bar” (see appendix).

**Instructions part 1**

First look at the bin(s) without touching them and ask pupils where the oldest rubbish is likely to be. Explain that archaeology works in the same way, the newer things are nearer the top and the older ones lower down in the ground. This is called stratigraphy.

Now carefully ‘excavate’ the bin(s) layer by layer, recording the objects as they are removed.

Explain to pupils that archaeologists gather evidence and make deductions and interpretations that help them to reconstruct life in the past.

Ask pupils to work in groups to try to find out as much as they can about the families using the rubbish as clues.

Discuss the ideas from each group and the problems of working with the evidence.

Discuss what we can tell about the society that these people belong to.
Now imagine the bin(s) are left for 1,000 years. What would survive? Try to answer the questions about the families and about the society again using only the surviving evidence.

Discuss the fact that this is the sort of evidence archaeologists are working with.

Discuss which items of rubbish could be or have been recycled. What sort of objects might have been recycled or reused in the past, and why?

Photograph the individual ‘finds’, using a ruler in your photographs to provide scale or the scale bar provided (see appendix).

Draw the individual ‘finds’ (this could be done to scale with secondary pupils).

Discuss the need for a scale bar in the drawing/photograph (allows us to see the actual size of an object even if the drawing/photo is shrunk or enlarged, e.g. for publication in an archaeological report).

Fill in a “Finds recording form” for each object (see appendix).

Create a display with a diagram of the bin/bag and its layers, using the finds sheets and photographs/drawings to illustrate its contents.

With older pupils you may wish to extend the drawing activity. There is an excellent step-by-step guide to archaeological illustration on the SCRAM website - an online resource from the Royal Commission on the Ancient and Historical Monuments of Scotland. (See appendix for web address).

The concept of excavation lends itself well to be taken further, by creating a mock excavation with appropriate ‘finds’ and ‘features’ (such as walls or hearths created from a line or group of stones). This can be done fairly easily in the classroom with a large tray of sand, or outside on a larger scale. You can use trowels and paint brushes for excavating and seed trays for the excavated finds.
F) Understanding stratigraphy

This activity develops the concepts of chronology and stratigraphy introduced in the previous two games, or can be used on its own as an alternative introduction. Sugar paper is used to simulate the different layers of an excavation. Removing or ‘excavating’ each layer reveals finds which are then fitted into a flow chart called a ‘Harris Matrix’. This is used by archaeologists to visualise sequences of time on archaeological sites.

This ‘excavation’ gives a very simplified version of what you would actually be dealing with at an archaeological site. There are five layers with a ‘find’ in each layer except the second last layer which contains two ‘finds’. The ‘finds’ are being used to represent each archaeological layer or ‘context’ that would be recorded on the matrix. The ‘finds’ images used here are all objects from Shetland Museum and Archives. The “Understanding stratigraphy” sheet 4 works well as an extension of this activity or can be used alone (see appendix).

Experiences and outcomes

This activity explores the concept of chronology and the way in which archaeologists use evidence to help us gain a greater insight into past lives. The learning outcomes are mainly from:

Social Studies
SOC1-01, SOC1-03, SOC3-01, SOC2-02, SOC4-01

Mathematics
MTH2-21 – MTH4-21

The activity is aimed at P6-7 and S1-3 but without the “Understanding stratigraphy” sheets 6&7 (or with a simplified version) can be used with younger pupils. Outcomes from the Sciences can be incorporated for older pupils through discussion of the various archaeological dating methods.

For this activity you will need:

> Sugar paper (ideally a selection of natural shades) or brown paper.
> “Understanding stratigraphy” answer sheet (see appendix).
> Photocopies of “Understanding stratigraphy” sheets 1-3 (see appendix).
> Scissors
> Glue

A section through the Cruester site.
Cut out images from “Understanding stratigraphy” sheets 1a and 1b.

Arrange the images in chronological order with a piece of sugar paper between each image - note that the 19th century ‘layer’ will contain two images. (If you are unsure of the order check “Understanding stratigraphy” sheets 1a and 1b and the notes with each image on answer Sheet).

Pupils cut out the images and labels from “Understanding Stratigraphy” sheet 2 and use them to fill in “Understanding Stratigraphy” sheet 3 with the appropriate labels attached. The correct answers can be checked against “Understanding Stratigraphy” answer sheet.

To make this activity more challenging the sugar paper can be missed out and the pupils given the images without labels to arrange in chronological order. They can then go on to fill out “Understanding Stratigraphy” sheet 3 as above. In this instance the concept of layers in the ground should still be discussed to help pupils understand the concept of stratigraphy and how archaeologists date finds.

**Suggestions for discussion / extending the activity**

Why is it so important to excavate and record objects very carefully?

Discuss the importance of stratigraphy in dating objects.

What other methods of dating objects are available to archaeologists?
A Bronze Age pot was found in the excavation of the burnt mound, a reconstruction of which can be seen in the Heritage Centre. Often archaeologists are finding what people in the past have thrown away, therefore they are usually dealing with broken and incomplete pots. This activity introduces the methods archaeologists use to reconstruct pottery fragments.

**Experiences and outcomes**

This activity examines the way in which archaeologists use evidence to help us gain a greater insight into past lives, and the way in which they interpret and record this evidence. It covers a variety of learning outcomes, including:

**Social Studies**
SOC1-01, SOC1-03, SOC3-01, SOC4-01

**Mathematics**
MTH2-16 – MTH4-16

This activity is aimed at P6-7 and S1-3 but can, with care, be used with younger pupils.

**For this activity you will need:**

> A selection of different old pottery (which you are prepared to destroy), ideally a mug, bowl and plate in different colours or with different patterns. It must include some pieces with a rim (from a mug or bowl for instance).

> Photocopies of the “Rim chart” (see appendix).

> Gloves to protect against sharp edges on pottery.

**Instructions**

Carefully smash the pottery in advance (place into bag or cover with a towel first to protect against flying fragments).

Place assorted broken pottery onto table and ask pupils to try to sort it back into the different vessels.

Allocate each group a different vessel to try to reconstruct like a jigsaw.

Remove most of the broken pottery randomly leaving around 25% on the table and discuss how much more difficult it is to reconstruct what vessels were present and what sizes they were.

Use the rim chart to work out the diameter of any vessels represented by rim fragments.

**Suggestions for discussion / extending the activity**

This activity can be used with the “Finds recording form” to record the different vessels. A guide to drawing pottery can be downloaded from the Young Archaeologists Club webpage (see appendix). In the Bronze Age pottery was made by pinching or coiling clay. Pots could be beaten or smoothed into shape with a wooden tool and patterns added to the surface. Air drying clay provides a good medium for making pots like these.
4.1.3 Our heritage?

Cruester burnt mound was excavated and moved to increase our understanding of burnt mounds and to save it from being lost to the sea. This section of the education pack looks at the challenges of heritage in the modern world. It explores different methods of heritage interpretation and presentation and the increasingly present issue of climate change and sea level rise.

Activities and subject links

H) Debate
Social Studies, Expressive Arts, Languages, Technologies

I) Presenting the past
Social Studies, Expressive Arts, Languages, Technologies

J) What the past means to us
Social Studies

K) Investigating coastal erosion
Social Studies, Sciences

Moving stone from the original site to the new location.

Scraping the fat off a cow hide ready for tanning in the replica tank.
H) The debate

This activity takes the form of a debate. The topic is the issue of how to deal with heritage, particularly coastal archaeological sites, in the face of climate change and rising sea levels. Sites are being lost to the sea every day all over Scotland. There is not enough time or money to save them all, so what should we do? There are various archaeological options to consider, including:

a) Excavate as many site as possible and record them before they are lost.
b) Excavate a few key sites thoroughly and accept the others will be inevitably lost.
c) Excavate key sites and reconstruct them further inland as has been done at Bressay.
d) Focus professional archaeological expertise and funding on a few key sites and encourage local amateur archaeology and community groups to become involved with recording their local sites.

Experiences and outcomes

This debate explores the contemporary issues of dealing with heritage in the face of climate change, including real life scenarios and issues of politics and funding. It covers a wide variety of learning outcomes, including:

Social Studies
SOC3-01, SOC3-08, SOC4-01, SOC4-08, SOC4-10

Expressive Arts
EXA1-01 – EXA4-01

Languages
LIT1-02 – LIT4-02, LIT2-06 – LIT4-06, LIT2-09 – LIT4-09, LIT1-14 – LIT4-14

Technologies
TCH1-03b – TCH4-03b

The activity is mainly aimed at P6-7 and S1-3 but can be adapted to work with older and younger age groups.

For this activity you will need:

> Copies of the “The debate” worksheet (see appendix).
> Access to the Internet (see appendix for useful links) & computer applications such as Microsoft Publisher.
> Flipchart/whiteboard/Smart board
**Instructions**

**The scenario:**

A local archaeological site is eroding into the sea. It is eroding so quickly that portions of the site are being lost every year. Archaeological finds from the site have begun to appear on the beach after every big storm, washed from their original context within the site and therefore no longer as useful in dating or interpreting the site. A meeting is called and various people and organisations are invited to put forward their opinions and suggestions for dealing with this problem.

Divide the class into groups, provide each group with a copy of the scenario, and the opinion of “their organisation” (see appendix for “The debate” sheet). Do not allow each group to know the opinions of the others.

Send each group off to discuss their stance in the debate. They can use the Internet to gather further information about the role of similar organisations.

Each group should prepare a presentation to present to the class. Applications such as PowerPoint can be used to present their argument.

Each group presents their argument and then the floor is opened to discussion with the various groups staying in character as their organisation.

Each group produces a press release on their opinions, and the debate can be written up as a newspaper article, as a similar debate in real life might be covered in the local or national press.

**NB** Watching the DVD/podcast may be useful preparation for this activity as it introduces the reasons behind the Bressay project and some of the individuals and organisations involved in it.

**Suggestions for discussion / extending the activity**

Ask pupils to give their own opinions based on what they have learned from this exercise.

Discover whether their initial opinion was changed by the debate.
I) Presenting the past

This activity explores different ways in which heritage sites and tourist attractions can be presented. It covers writing and graphic styles and encourages pupils to consider ways of best presenting a message to the intended audience.

Experiences and outcomes

The activity covers a wide variety of learning outcomes, including:

Social Studies
SOC1-03, SOC2-10, SOC3-01, SOC4-01

Languages
LIT1-06, LIT1-14 – LIT4-14, LIT2-16 – LIT4-16, LIT2-24 – LIT4-24, LIT1-26 – LIT4-26

Technologies
TCH1-03b – TCH4-03b, TCH1-04 – TCH3-04

It is mainly aimed towards P6-7 and S1-3 but can be adapted to work with younger age groups.

For this activity you will need:

> Copies of leaflets from various sites around Shetland (or Scotland). These can generally be picked up from the Tourist Information Office, the sites themselves and the Museum; some national sites have downloadable leaflets online. Try to avoid picking up leaflets all by a single organisation as ideally you want a few different examples.

Instructions

Ask pupils to look at the leaflets or websites (or collect their own in advance) and discuss the writing style used and the intended audience.

Ask pupils to produce a leaflet or poster promoting a site or attraction in their area.

Suggestions for discussion / extending the activity

Ask pupils to consider the best means of attracting particular audiences.

Ask pupils to work on a foreign language translation of an existing leaflet.
J) What the past means to us

The Bronze Age Bressay! Project is an innovative community project which not only excavated and recorded Cruester burnt mound before it was lost to the sea, but also reconstructed it, with the aim of providing the only burnt mound on Shetland available for members of the public to see excavated and laid out. Following on from this, a programme including experimental archaeology, open days and art workshops has meant that the burnt mound has once again become an active place for the community.

Experiences and outcomes

This activity encourages pupils to look at the potential of sites such as these as a community resource and consider how they impact on the daily lives and identities of the people involved. It covers a wide variety of learning outcomes including:

Social Studies
SOC1-03, SOC2-10, SOC3-01, SOC4-01, SOC4-02

Expressive Arts
EXA1-04 - EXA4-04

Languages
LIT1-10 – LIT4-10

For this activity you will need:

> The DVD that came with this pack.
> Access to the Internet.

Instructions

Look at the history of the Bronze Age Bressay! Project to date (see appendix for web links). How has the project involved local people?

Encourage pupils to consider what else they might do at the Bressay burnt mound to involve local people.

Discuss heritage sites the pupils are familiar with in their local area and the way they are used today.

Identify a local site or project and investigate what it means to local people. This could be done through interviews with members of the community either in school or at the site, which could be recorded to create an oral history record.

Suggestions for discussion / extending the activity

Discuss how different activities offered at heritage sites affect the experience people have of the site, and how they might attract different audiences.

The material from discussion and investigation during this project provides considerable opportunity for creative work. This could include written information, artwork, film and audio recordings which could be incorporated into an exhibition or promotional materials about the site.
Cruester burnt mound was excavated to save it from complete destruction by the sea. This activity looks at the processes of coastal erosion, why it is one of the biggest threats to our coastal archaeology and what action can be taken to protect sites.

**Experiences and outcomes**
This activity examines the way in which coastal erosion threatens our archaeological heritage. It covers a variety of learning outcomes including:

**Social Studies**
SOC1-07 - SOC4-07, SOC3-08, SOC4-10

**Sciences**
SCN3-17

**For this activity you will need:**

- Large tray
- Sand
- Pebbles
- Water

**Instructions**

Build up wet sand on one side of the tray with something representing the site (such as a ring of pebbles). Stones can also be incorporated to represent variations in the geology of the coast.

Fill the other portion of the tray with water to a reasonable depth.

Increase the water level to represent sea level rises and represent the tide by sloshing the water against the ‘coast’.

Note the effects of this on the sand and the site, the effects will vary according to the severity of the tide and ‘weather’ represented by the motion of the water, and the level of the ‘sea’.

Further complexity can be added by creating an irregular coast line.

**Suggestions for discussion /extending the activity**

Shetland has many good examples of coastal erosion and many heritage sites threatened by sea level changes. Sites such as Mousa Broch and Jarlshof illustrate action that can be taken against coastal erosion using artificial buffers to protect the site. Other sites around the coast have no protection and are being visibly eroded. Sites such as the St Ninian’s Isle chapel illustrate the effects of wind action on archaeology buried in sand. Photographs of, or visits to these sites provide material for discussion of the processes of coastal erosion and its effect on heritage sites. The SCAPE (Scottish Coastal Archaeology and the Problem of Erosion) website and associated Shorewatch websites contain useful information to help you (see appendix for web links). This is a good opportunity for another field trip to look at some examples of coastal erosion, either at a local archaeological site, or a local piece of coastline.
4.2 On the site

4.2.1 Understanding the burnt mound

The reconstructed burnt mound at Bressay offers scope for interaction and engagement with the past which cannot be achieved solely through classroom activities. A visit to the site can be the introduction to or the culmination of the concepts of interpretation, experimentation, and heritage preservation, management and presentation which run through this education pack.

Activities and subject links

L) Recreating the site layout & recording archaeological features
Social Studies, Mathematics, Expressive Arts, Languages

M) Answering the questions
Social Studies, Technologies

N) Experiencing the past
Social Studies, Expressive Arts, Languages

Surveying the site with an EDM.

Sandstone with conglomerate layer, Bressay burnt mound.
L) Recreating the site layout & recording archaeological features

This activity takes place on site, beside the Bressay Heritage Centre, and uses the Archaeology Kit which is stored in the Heritage Centre (available during opening hours). It should be signed in and out and the contents checked, but does not need to be booked. It is advisable to phone in advance to check it will be available.

Experiences and outcomes

This activity links in with the activities in the “How does archaeology work?” section but develops the recording of finds up to site level and looks at recording features (such as walls, floors, hearths etc) rather than finds. This completes the set of archaeological activities. By undertaking the activities on site and those in “How does archaeology work?” pupils will have had the opportunity to learn about recording all three levels of evidence on an archaeological site — finds, contexts (layers) and features. It covers a wide variety of learning outcomes including:

Social Studies
SOC1-01, SOC1-02, SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC3-07

Mathematics
MNU2-11 – MNU4-11

Expressive Arts
EXA1-04 – EXA4-04

Languages
LIT1-26 – LIT4-26

For this activity you will need:

- Pencils
- Paper
- Copies of “Feature recording form” (see appendix)
- Digital camera(s)
- Archaeological kit from the Heritage Centre. Contents of kit:
  - Tape measures
  - Ranging poles
  - Tent pegs
  - String roll line & winder
  - Planning frame
  - Laminated site plan
  - Laminated 1:1 scale
  - Instructions
Instructions

Use the set of measurements and site plan provided to lay out the ‘footprint’ of the site on the grassed area beside the site using the resources in the kit. Measure out the exterior measurements of the site and mark initially with ranging poles, then using string and tent pegs.

Using the planning frame pupils can draw an area of the site, such as an area of the paving or tank at 1:1 scale. The planning frame enables accurate recording as it breaks the area down into small sections which can then be drawn in detail (the instructions in the archaeological kit include more information on using a planning frame). The drawing can later be transferred to the Feature Recording Form.

A digital camera can be used to take photographs both of the reconstructed ‘footprint’ of the site and of specific areas of the site itself, using the laminated 1:1 scale in each photograph.

Suggestions for discussion / extending the activity

Having seen the site for themselves encourage pupils to discuss the original use of the site and their experience of the reconstruction.

Use the “Feature recording form” to record and catalogue any extra features and photographs.

Look at examples of archaeological writing and write a short archaeological report on the site (or the section the pupils worked on).
Burnt mounds are among the most enigmatic archaeological sites in Shetland. No-one knows what they were originally used for, therefore they offer tremendous scope for encouraging speculation among pupils. Since there is no “correct” answer pupils faced with the actual site and evidence should be encouraged to use their imagination and be confident with ideas and interpretations.

Current theories of their use have tended to focus around:

a) Bathing  
b) Brewing  
d) Cooking  
e) Fulling cloth  
f) Tanning leather  
g) Saunas

See “Teacher’s information sheet 2” in appendix, or DVD/podcast for more detail.

All these processes require quantities of hot water and/or steam. Burnt mound sites do not usually have many finds and generally the only common features are small cell-like ‘rooms’ leading off a main passage, a considerable quantity of burnt rocks, a tank and their location near a water source. Therefore any explanation that is appropriate to the technology and materials available on Shetland in the Bronze Age is valid.

**Experiences and outcomes**

This activity explores how we use evidence to interpret past lives and brings together many of the skills and concepts that run through this pack in order to encourage pupils to feel confident in formulating their own theories about the original use of the site. It covers a wide variety of learning outcomes including:

**Social Studies**  
SOC1-01, SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC4-01  

**Technologies**  
TCH1-03b – TCH4-03b  

**Languages**  
LIT2-29 – LIT4-29

**Instructions**

Encourage pupils to use the evidence and their own experiences to discuss and record possible uses of the burnt mound.

**Suggestions for discussion / extending the activity**

Ask pupils to consider how they would set up an experiment to test their theories and record the results.
It is important to stress to pupils the incredible multi-sensory experience that a visit to these sites in the Bronze Age must have been. The steam, smoke, fire, flying pieces of exploding rock and the smells from activities such as cooking, washing fleece or tanning would make it an incredibly intense experience.

Experiences and outcomes

This activity works well as a culmination of a project looking at the burnt mound, although it can be done at any point. It uses the skills the pupils have built up by working through the activities suggested in this pack, and combines archaeological evidence with the pupils’ own imaginative responses to the site to create an interpretation of how people may have used and responded to the site in the past. It covers a wide variety of learning outcomes including:

Social Studies
SOC1-01, SOC1-02, SOC1-03, SOC1-04, SOC2-04, SOC3-01, SOC4-01, SOC4-02
Expressive Arts
EXA1-05 – EXA4-05
Languages
LIT1-26 – LIT4-26, LIT2-29 – LIT4-29

Instructions

There is tremendous scope on site for inspiring imaginative writing and drawing after the visit, based upon the huge variety of narratives and interpretations surrounding the site and the multi-sensory experience of the site in the Bronze Age. Pupils should be encouraged to use their imagination and be confident with handling the evidence and various interpretations. It is important that they truly recognise that these sites, far from being bare arrangements of stones were once vibrant places that were part of an active community. This discussion and the resulting written and/or drawn material should take archaeological interpretation that stage further from recording and measuring to a more sensory level, trying to use this evidence to reconstruct how people may have lived their lives and experienced the site in the past.
## 5. Appendices

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### 5.1 Activity Sheets (for use with Activities E, F, G, H and L)

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Finds recording form

Name: ____________________________  Date: __________________

Context (where was it found?): _______________________________________________________

Object type (what is it?): _____________________________________________________________

Fabric (what is it made of?): __________________________________________________________

Condition (is it damaged?): ___________________________________________________________

Function/Interpretation (what is it for?): _______________________________________________

Sketch:

Drawing No.: _____  Photograph No.: _____

Signed: ___________________________________________
These scale bars can be photocopied for use in any photographs and drawings. All are marked in centimetres. Please check your printer settings to ensure this prints out at 100% so that the scale bars are correct.

1:1 Scale bar — suitable for all photographs, or 1:1 scale drawings

1:2 Scale bar — suitable for 1:2 scale drawings

2:1 Scale bar — suitable for 2:1 scale drawings
Name: ___________________________________   Date:   ________________

Type of feature (what is it? E.g. wall, hearth, tank, floor etc): ___________________________

Dimensions (measurements): ________________________________________________________

Sketch:

Drawing No.: _____  Photograph No.: _____

Signed: ________________________________
The rim chart on the following page can be photocopied for use in the “Looking at Pottery” activity. Please check your printer settings to ensure this prints out at 100% so that the measurements are correct.

**Using the Rim Chart**

The rim chart is very simple to use, just place the piece of pottery (which must be a section of rim) upright on the rim chart, as close to the left hand side of the chart as possible, and move until it matches one of the curves. To work out the diameter of the whole piece of pottery just read off the number on that curve (the radius) and double it to get the diameter.

This chart will work on pottery with diameters from 2-56cm.
Images and information

These images are to cut out for use with the “Understanding Stratigraphy” activity. They represent objects in Shetland Museum and Archives from various time periods. The information with each object can be given to pupils, or withheld, to alter the difficulty of the activity. Objects are not in date order on these sheets (see answer sheet for correct order).

**Earthenware bottle**

In Shetland these bottles were known as gin crooks, and were used to store alcohol, which was often smuggled into Shetland and hidden around crofts. This bottle dates to around 1890 and was used to smuggle gin from Faroe.

*Photograph courtesy of Shetland Museum and Archives*

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**Bone Comb**

These combs were probably mainly used to remove lice from hair, and were carved from different kinds of bone or antler. This comb was made during the Iron Age/Pictish period but similar combs continued to be used through the Viking and Norse periods.

*Photograph courtesy of Shetland Museum and Archives*

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**Horn spoon**

These spoons were used in Shetland right up until cheap factory made spoons became available in the mid-19th century. This style of spoon was used a lot during the 18th century.

*Photograph courtesy of Shetland Museum and Archives*
Images and information

These images are to cut out for use with the “Understanding Stratigraphy” activity. They represent objects in Shetland Museum and Archives from various time periods. The information with each object can be given to pupils, or withheld, to alter the difficulty of the activity. Objects are not in date order on these sheets (see answer sheet for correct order).

Stone axe
This prehistoric axe is made from felsite, it is highly polished and has a very sharp edge, in this photograph it has a modern handle to show how it would have looked. It probably dates from the Bronze Age.

Photograph courtesy of Shetland Museum and Archives

Metal helmet
This helmet is from the 1940s and was used during the Second World War.

Photograph courtesy of Shetland Museum and Archives

Straw kishie
These baskets were used to carry grain, fertiliser and peat either on ponies or on people’s backs. This kishie dates from around 1890-1900.

Photograph courtesy of Shetland Museum and Archives
Images for Finds recording chart

These images are to cut out for use with the “Finds recording chart” for the “Understanding stratigraphy” activity. Objects are not in date order on this sheet (see answer sheet for correct order).

Photographs courtesy of Shetland Museum and Archives

19th century kishie
Prehistoric stone axe
18th century horn spoon
20th century helmet
Iron Age/Pictish comb
19th century earthenware bottle
Finds recording chart
Challenge

Look at the picture and put the layers in the right order on the flow chart below, with the oldest layers at the bottom and the most recent at the top.

*Hint*: anything that has been dug down into a layer has to have been done after that layer was formed.

After you have filled in the chart, think about:

Which layers have other things dug down into them? What might these holes have been dug for?

Which layers have been disturbed by something modern? What might have happened to the finds in that layer?
Finds recording chart

- 20th century helmet
- 19th century kishie
- 19th century earthenware bottle
- 18th century horn spoon
- Iron Age/Pictish comb
- Prehistoric stone axe

Hint:
G, I, F and B have holes dug down into the layers, these could be post holes for fences or buildings, or ditches for boundaries or drainage.
B, H and C have been disturbed by modern plant roots, this may have caused the archaeological finds in these layers to move and they cannot be dated as confidently as the other layers.

Challenge
C
H
D
B
F
I
A
E
G
A local archaeological site is eroding into the sea. It is eroding so quickly that parts of the site are being lost every year. Archaeological finds have begun to appear on the beach after every big storm, washed from their original context within the site and therefore no longer as useful in dating or understanding the site. A meeting is called and various people and organisations are invited to put forward their opinions and suggestions for dealing with this problem.

Heritage Scotland – wants to protect as much as possible of its heritage, all over Scotland, but has certain major attractions that need a lot of money for upkeep and also bring in valuable income that can be redistributed to support Scottish archaeology.

Scottish Tourism – wants to develop local tourism and create sustainable tourist attractions.

Natural Scotland – concerned about the impact on coastal ecosystems and habitats brought about by building sea defences around sites, and the potential change of erosion patterns created by these defences that may then erode other coastal areas that were not previously threatened.

County Archaeologist – is very worried about local archaeological sites rapidly eroding into the sea, but has no budget or time to spend on them. Believes we should attempt to record as many sites as possible before they are lost.

Climate Change Scientist – believes the most important thing heritage can contribute is to encourage local and/or carbon neutral tourism, rather than encouraging long distance tourism.

Local Hotel Owner – interested in attracting people to the local area, welcomes any new tourist attractions.

Local History Group – cares strongly about saving their local sites from destruction.

Scottish Archaeology and Coastal Erosion Group - set up to tackle the problem of eroding coastal archaeology. Works with local and national organisations to try and record or conserve sites before they are lost to the sea.

NB The above are representative of the kinds of individuals and organisations likely to be involved in a debate of this kind. However, the opinions here expressed have been ascribed to them by the author.
The burnt mound

Burnt mounds generally date to the Bronze Age (c. 2000-800BC).

The Cruester burnt mound has been dated to the late 2nd millennium BC (c. 1300-1100BC).

All burnt mounds consist of a mound of burnt stones, some also have a large tank and a hearth or kiln and they are generally found near a source of water.

Some, including Cruester, also contain small rooms leading off the main passage.

Their purpose is unknown, but presumed to involve heating stones and using them to heat liquid in the tank.

Possible uses of the mound

Cooking
Could the tank have been used to boil large quantities of food? There is some written evidence for burnt mounds in Ireland being used in this way in historic times. However there is usually very little evidence of either food waste or other cooking materials on these sites. Would roasting meat over a fire have been easier?

Bathing
Could the tank have been used as a bath? Think about the size of the tank (1.6m x 1.1m x 0.6m deep) and the method of heating the water—would this work?

Saunas
Pouring water over hot stones in the tank would make a lot of steam. Saunas have been used until recently not only to get clean but to get rid of parasites such as lice and fleas, which would probably have been a problem in the Bronze Age.

Fulling cloth
Cloth is soaked in warm urine and pounded to produce a thick felted fabric.

Tanning
Animal skins are soaked in warm urine, dung and animal brains to produce leather.

These are not the only possible uses. During the experimental archaeology carried out in 2010 the replica hearth and tank were used successfully to brew several varieties of beer with ingredients which would have been available to the Bronze Age Shetlanders.

For more information please see the DVD/podcast available with the education pack and online.
The reconstruction

The site was originally excavated in 2000 as it was being badly eroded by the sea.

It was re-excavated in 2008 and moved stone by stone to the Bressay Heritage Centre where it was carefully reconstructed. Each stone was numbered to ensure it was replaced correctly.

The experimental archaeology

The replica tank and hearth cell were built to allow experiments to take place on site.

A programme of experimental archaeology is planned to take place each year.

In 2010 experiments were conducted into:

a) The efficiency of heating water using hot stones from the hearth cell. The overall water temperature in the tank reached 80 degrees centigrade.

b) Cleaning cow hides which were then used to build a coracle (boat).

c) Brewing beer.

Timezone show off their coracle built with cow hides cleaned in the replica tank.
Location map

A) Location of the original Cruester burnt mound

B) Location of the reconstructed site at Bressay Heritage Centre
Glossary of archaeological terms

**Archaeological record** - all archaeological evidence; generally refers to buried archaeology and consists of everything archaeological whether currently known or unknown.

**Artefact** - any portable object made or modified deliberately by a human being, rather than features such as hearths, roads, walls, or postholes or environmental evidence such as seeds, bones etc.

**Context** - an event in time that has been preserved in the archaeological record, this can be a post hole, a wall, a layer, a burial etc. Archaeological finds without a ‘context’ have little or no archaeological value as they do not help you to understand the development or use of the site, therefore careful excavation and recording is the most important factor in modern archaeology. Excavation without adequate recording is simply destruction.

**Feature** - a non-portable object that has been created or modified by human activity, such as a hearth, road, wall or posthole.

**Stratigraphy** - the layers and features that make up an archaeological site.

**Harris Matrix** - a flow chart used to record the contexts of an archaeological site and make sense of the chronology. Invented in the 1970s for use on very complex urban excavations.

Useful links

**Bronze Age Bressay!**: http://www.shorewatch.co.uk/cruester/

**Historic Scotland**: http://www.historic-scotland.gov.uk/

**SCAPE**: http://www.scapetrust.org

**Scottish Natural Heritage**: http://www.snh.gov.uk/

**SCRAN**: http://www.scran.ac.uk/


**Shetland Amenity Trust**: http://www.shetland-heritage.co.uk/amenitytrust/index.html

**Shorewatch**: http://www.shorewatch.co.uk

**Visit Scotland**: http://www.visitscotland.com/

**Young Archaeologists Club**: http://www.britarch.ac.uk/yac/