



Biodiversity

and The Curriculum for Excellence



East Lothian
Council

Using this guide...

Basic concepts of biodiversity, such as food webs or differences between species, have been part of the curriculum for a long time so much of biodiversity will be familiar to you already. Despite the seriousness of species extinction and habitat loss, teaching biodiversity can be made simple and a lot of fun. The Curriculum for Excellence also encourages learning outside, whether in outdoor classrooms, Forest Schools, or less formal arrangements. This makes biodiversity a very convenient topic to teach, since wild species are all around; in the playground, local park or wood.

This guide aims to provide information and support to teachers who want to teach biodiversity and related topics. Useful websites and other resources are given, as well as some ideas of biodiversity topics to explore. Studying biodiversity can support many outcomes and experiences of Curriculum for Excellence and these are listed at the end of this guide.

A principal element of teaching biodiversity is getting children outside - the hands on approach. This guide summarises what you need to know before taking your class outside and lists some wildlife sites near different towns that you may like to consider.

Finally, if you have any questions about biodiversity, there are many specialists who can help teach a particular topic or be involved with a school visit. A list of names and contact details is provided.

If you have any questions, please email ranger@eastlothian.gov.uk

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What is Biodiversity?

Put simply, biodiversity is the variety of life. This simple phrase summarises everything that biodiversity is, but does not quite convey its depth or importance. Biodiversity describes all species that live on Earth, as well as all those that used to live on the planet. Biodiversity includes the habitats where these species live and the natural behaviours and interactions between different individuals, species and habitats. We know of about 2.5 million species on the planet, but there could be 10 or even 100 million in total. Some of these species are extremely rare, or will have very specific ecological requirements. We know so little about our natural world and need to learn more.



Biodiversity is under threat from modern life. Landscapes can change very quickly if modern farming, industry and urban expansion ignore the needs of wildlife. This has been happening for so long that many species have become extinct and many more are threatened with extinction. So serious is the threat to biodiversity, that the United Nations designated 2010 as the International Year for Biodiversity. 2011 to 2020 is the International Decade for Biodiversity.

Species extinction through ignorance could have a big impact on people. Biodiversity keeps people alive by providing freshwater, food, productive soils, pollination, medicine, raw materials, oxygen, flood control etc, etc. Collectively, these biodiversity gifts are known as ecosystem services and we cannot live without them.

Some measures are being taken to help reduce our impact on biodiversity and sustain these ecosystem services. These include planning policies, pollution control and land management regulations but a crucial part of the process is education. Current decision-makers need to know about their impacts on biodiversity and ways to enhance the environment. Just as important, the next generation of decision-makers need to know about biodiversity so that they can avoid the mistakes of their elders. This booklet should help you teach the next generation.

Help with your classes or projects

Individuals and organisations offering support and advice



Bat Conservation Trust - can visit schools to explain about bats, but would be especially keen to meet groups of teachers to explain the life cycles and habitats of bats.

01786 826792

www.bats.org.uk

East Lothian Council Biodiversity Officer - can give presentations to schools or classes on biodiversity or related topics. The Biodiversity Officer will also help to develop school grounds, particularly through the Grounds for Awareness award. This award is launched annually in September and can offer up to £1000 for a wildlife, gardening or landscaping project within school grounds.

01620 827242

East Lothian Countryside Ranger Service - can visit schools or help with longer term studies such as rivers or rock pooling. They can also work closely with related initiatives such as the John Muir Award and Forest Schools.

ranger@eastlothian.gov.uk

www.edubuzz.org/blogs/rangerservice

East Lothian Outdoor Learning Service - often working closely with the Ranger Service. They can provide environmental education, linking this with adventurous activities such as canoeing, gorge walking or coasteering.

0131 653 5217

www.edubuzz.org/outdoorlearning

John Muir Award - to use the description from the John Muir Trust website, 'The John Muir Award is an environmental award scheme focused on wild places. It encourages awareness and responsibility for the natural environment, in a spirit of fun, adventure and exploration'. The Ranger Service can help develop the John Muir Award with a group or class. To take part in the John Muir Award call:

01796 484972

John Muir Birthplace Trust - John Muir was born in Dunbar but emigrated to America with his parents. He loved wilderness and campaigned for its protection, eventually setting up the world's first national parks. Learn more about our famous son at his place of birth in Dunbar. Admission free.

01368 865899

www.jmbt.org.uk

National Trust for Scotland Countryside Ranger - based at Newhailes House and Inveresk Lodge in Musselburgh and at Preston Mill in East Linton. They take school groups at their different sites and will help teach a variety of biodiversity and environmental topics – just ask. Free to educational members of the NTS, otherwise £2 per pupil.

0844 493 2124

Scottish Seabird Centre - offers a range of educational activities, linking closely to the marine life found around the East Lothian coast. Use the remote cameras on the Bass Rock to view nesting gannets, puffins and basking seals. Include rock-pooling or beach studies in your visit.

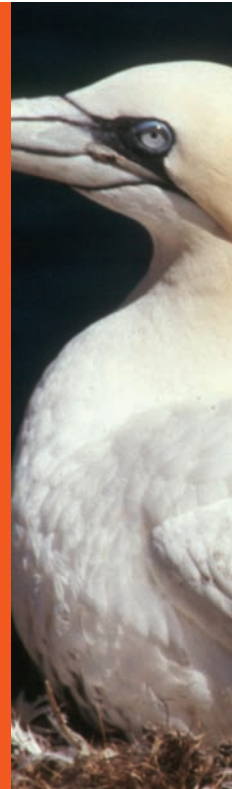
www.seabird.org/home.asp

And don't forget – as well as professionals, there's often a wealth of local talent amongst your parents and grandparents. Use their knowledge and enthusiasm to help with gardening, bird-watching, making bird boxes and raised beds, or to describe the countryside when they were young.



Education packs

A great many teaching ideas and resources have been produced over the years. Some existing education resources are listed below, each containing teachers' notes and explanations of how activities link to the curriculum. Some of the packs are tangible resources and have been sent to schools in previous years. You will need to search your cupboards if they are not familiar to you. Other packs can be downloaded from the web.



The Great Plant Hunt (Charles Darwin) - produced by the Wellcome Trust and Kew Gardens for the 200th anniversary of Darwin's birth and the 150th anniversary of the publication of the Origin of Species. This pack is inspired by Darwin's achievements and provides a great variety of activities and resources for exploring the natural world and the plant hunters of Darwin's day and the present day. This also links to a virtual pack at:

www.greatplanthunt.org

Bat Conservation Trust - explore the world of bats. This pack includes activities, information, stickers, posters and quizzes about bats and how they live.

www.bats.org.uk

Biodiversity and the Farming Year - produced by East Lothian Council and the Royal Highland Education Trust. The pack includes various activities based on a hypothetical farm, posters and biodiversity photocards. The pack was sent to all primary schools in East Lothian in 2003.

Biodiversity: the variety of life - this pack was produced by the Edinburgh Greenspace Trust and is aimed primarily at P4. It describes biodiversity and explains why it is important for humanity. The pack was sent to all primary schools in the Lothians and can also be downloaded:

www.elgt.org.uk/index.php?page=biodiversity-education-pack

Osprey and Salmon - this pack looks at biodiversity issues through the eyes of the salmon and osprey. It relates directly to the River Tweed and could be linked to a visit to Glentworth Forest in Peebles, for off-road cycling, woodland studies and viewing the ospreys at the visitor centre. This pack was originally produced for the 5-14 Curriculum and can be downloaded:

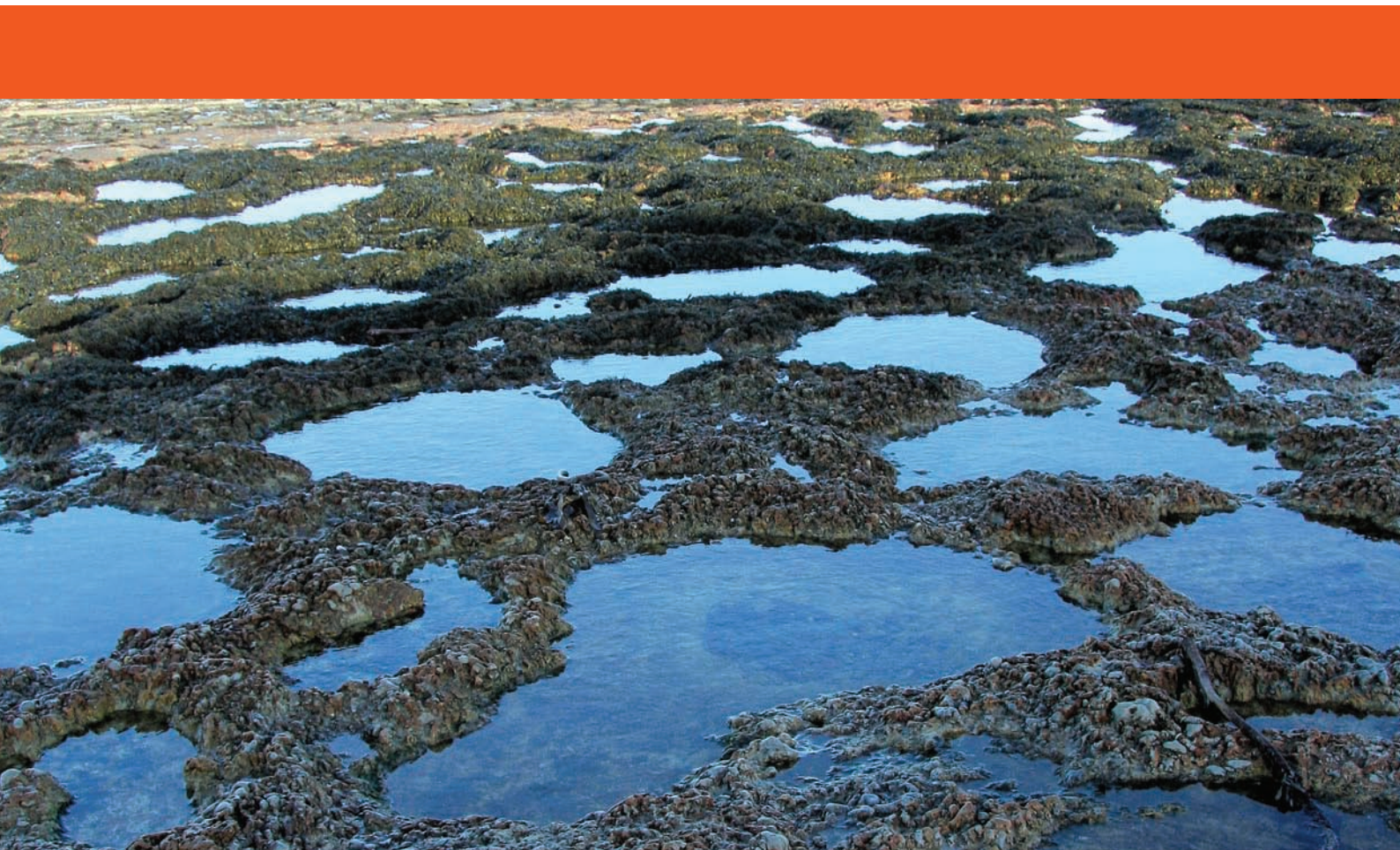
[www.forestry.gov.uk/pdf/OspreyandSalmonEducationPack.pdf/\\$FILE/OspreyandSalmonEducationPack.pdf](http://www.forestry.gov.uk/pdf/OspreyandSalmonEducationPack.pdf/$FILE/OspreyandSalmonEducationPack.pdf)

Scottish Natural Heritage - this pack contains over a dozen activity sheets that link directly to the curriculum. Each sheet is brief and simple in its explanations of activities. Activity ideas include photography, surveys, art, poetry, mapping etc. Download a pack at:

www.snh.gov.uk/about-scotlands-nature/resources-for-teaching/class-activities/biopack

Scottish Seabird Centre - this website contains a whole range of activity sheets, including two art-based education packs, produced by local teachers.

www.seabird.org/education-downloads.asp



Where can I go to see Biodiversity?

As well as looking at wildlife in your own playground, many schools have interesting habitats within walking distance of the school. These may be local parks or places with a more natural character, such as woodland or the beach. Some possible places for outdoor teaching are suggested. They all have a natural character and are arranged by high school cluster group.



Inclusion of a site on this list should not be taken as permission to use a site. You will need to carry out your own risk assessment (see below) and contact landowners to make sure you do not conflict with other activities. Sites written in *italics* are owned or managed by East Lothian Council (contact ranger@eastlothian.gov.uk). The list is not exhaustive and you may know or use other suitable places. Please explore your local wildlife opportunities.

Dunbar Cluster: **Dunbar and West Barns; Innerwick; East Linton; Stenton**

- *John Muir Country Park, Seafield Pond, Cliff-top Trail, Lochend Woods, Dunbar harbour and beach.*
- Corsick Hill path
- *River Tyne path* (part-owned by Council), Preston Mill, Smeaton estate
- Pressmennan Wood.

Haddington Cluster: **Haddington; Athelstaneford; Gifford**

- *Railway Walk, Tyne Path*
- Cogtail Burn and woods
- Yester Estate, Fawn Woods, Winding Law.

Musselburgh Cluster: **Musselburgh; Wallyford; Whitecraig**

- *Fisherrow, River Esk walk, Levenhall Links, Newhailes House, Inveresk Lodge.*
- *Wallyford Bing.*
- *Whitecraig Railway Walk.*

North Berwick Cluster: **North Berwick; Aberlady; Gullane, Dirleton**

- *North Berwick Law, East and West Beach, the Glen.*
- *Whinny Strips.*
- *Millennium Wood.*
- *Yellowcraig, Archerfield Estate.*

Prestonpans Cluster: **Prestonpans, Cockenzie, Longniddry**

- *Prestongrange, Morrison's Haven, Meadowmill.*
- *Sandy's Walk.*
- *Dean Woods, Railway Walk, Longniddry Bents, Gosford Estate.*

Tranent Cluster: **Tranent and Macmerry; Elphinstone, Ormiston and Pencaitland; Humble and Saltoun**

- *The Heugh, Birsley Brae, Whiteloch Farm path.*
- *Railway Walk, Winton Estate, the Jungle (Elphinstone).*
- *Upper Keith path and woods, Strawberry Wood.*



Outdoor visits: what you need to know and do

East Lothian Council encourages appropriate outdoor visits by school children. For biodiversity classes, visiting different habitats is essential to give children a better understanding of the topics they have been studying in the classroom.



To facilitate such visits, you must read the East Lothian Council Handbook for Educational Excursions. It is relatively short, and covers all you need to know, including:

- the planning of a visit
- emergency procedures
- risk assessments
- child protection
- adult supervision
- transport.

The Handbook can be found on www.edubuzz.org/blogs/eloes/resources/downloads. This website is maintained by the Council's Outdoor Learning Service and includes all guidelines relating to off-site visits, teacher training opportunities (e.g. managing groups in the outdoors) and links to the consent forms and trip authorisation process that must be completed. This process is important and will help you in the planning of your trip. **No Approval = No Trip.**

The head teacher can approve non-adventurous activities such as walking down a country path looking for flowers and birds. If this is a regular activity, e.g. once per month, then one trip authorisation can cover all visits. More adventurous activities, and overnight excursions, require approval by the head teacher and head of Education or Community Services. This can take up to 6 weeks.

When you are producing a risk assessment, you need to consider the following issues:

- Identify the issues (hazards)
- Gauge the possible level of severity of a hazard, e.g. minor, serious, death
- Gauge the probability of an issue developing
- Identify control measures to minimise the chances of a hazard, and to reduce its impact.
- Risk Benefit Analysis – look more closely at the associated benefits, rather than just the risks

For example, if visiting a local woodland:

Hazard	Severity	Likelihood	Control Measures
Vehicles	Death	Unlikely	Appropriate instruction and supervision of children, use crossing points, ensure vehicles have stopped
Trips and bumps	Minor	Likely	Appropriate instruction and supervision of children take, first aid kit and qualified first aider
Lost group member	Serious	Unlikely	Regular head count, ensure correct adult : pupil ratio

Although some of these procedures may seem daunting, it is relatively straight forward and requires little more than common sense. Training for teachers to help them run activities beyond the school grounds is also available. Look at <http://edubuzz.org/blogs/eloes/staffdevelopment>. However, to make the process even easier contact the Ranger Service for advice (ranger@eastlothian.gov.uk).



Project ideas to help teach Biodiversity, and appropriate places to visit

Species Diversity, Adaptation, Survival and Extinction – investigate the variety of wild species of an area (e.g. Scotland, an island). How have species adapted to their surroundings? How do human activities affect wild species and habitats and which species are threatened with extinction. Visit the coast and compare species of sand dune, rocky shore and woodland.

Visit Edinburgh Zoo to see rare animals and learn about their conservation work.

Tern Around the World – the arctic tern has the longest known migration of any species. It breeds in the arctic but flies south to Antarctic waters, with a round trip of over 40,000 miles. Explore the reasons for species migration and use the flight path of the tern to explore the wildlife, landscapes and cultures of other countries.

Visit the Scottish Seabird Centre or Levenhall Links.

Charles Darwin – provided evidence for the evolution of species and revolutionised our understanding of the world. He lived in 19th century Britain, and famously travelled the world gathering specimens and ideas. Use Charles Darwin as the theme for exploring the natural world, history and distant lands.

Use the Great Plant Hunt education pack.



Scotland's Biodiversity, past and present – investigate how our landscape has changed over millions of years. How have human activities changed the landscape and predict how the landscape would look if people were not around.

Visit Barns Ness to see the remains of forests that lived 300 million years ago.

Visit Traprain Law to see a former quarry and get a good view of the county.

Ecological Footprint – how much nature does your school use? This is more than a carbon footprint, it includes wood, rock and minerals used in school construction, food and drink consumed, how people travel etc. If everybody on the planet lived as we do, how many planets would we need. Have a look at www.scotlandsfootprint.org/.

Visit the Council's recycling and waste transfer stations at Dunbar and Kinwegar (near Wallyford). Phone 01875 824305 and ask for the recycling team.

Gardening – Grounds for Awareness funding can help develop formal fruit and vegetable plots in school grounds but fruit and vegetables can also be grown in the classroom or in pots outside. Fruit bushes are ideal because they flower in spring and produce fruit in the autumn term. This can help explain ecological concepts such as pollination, food chains and the necessity of biodiversity for human survival. **Visit the Royal Botanic Gardens, Edinburgh.**

John Muir Award – is a conservation-based award that encourages children (and adults) to discover, explore and conserve a wild place and then share your experiences with others. This is best suited to late primary school and secondary, but can be linked with Grounds for Awareness and citizenship projects. **Visit the John Muir Birthplace Trust and any of the wild places around the county.**

Citizenship Project – this is a collaboration between the John Muir Birthplace Trust, drama teachers and Countryside Rangers. Often linked with the John Muir Award, this project lets children explore nature and express this through drama, song and dance.

Internet resources

ARKive www.arkive.org a vast range of photos, film footage and information about seemingly every species. Information includes habitats, food, behaviour, biology etc. A great resource for research projects covering all parts of the world.

Bat Conservation Trust www.bats.org.uk includes information and activities for children and school groups.

BBC Breathing Places www.bbc.co.uk/breathingplaces/schools provides worksheets, resources and ideas for teaching environmental topics. The website includes a map search of projects funded through Breathing Places. Many are close to towns and should be open for school visits, though organise this with landowners first.

EcoSchools www.ecoschoolsscotland.org not just biodiversity, but energy, recycling, water use etc as well. A good national campaign with a defined process, goals and achievement. The website has lots of good information and ideas for activities.

Forest Schools www.forestschools.com ‘an innovative educational approach to outdoor play and learning.’

Grounds for Learning www.itl.org.uk/scotland provides advice and ideas to teachers for improving school grounds and for linking improvements to the curriculum. The Grounds for Awareness fund in East Lothian is based on Grounds for Learning. Application forms are sent to head teachers of all nursery, primary and secondary schools in early September.

I-Spot www.ispot.org.uk is an excellent web facility to identify species. Take a photograph of a species (plant, butterfly, moss, toadstool etc) send it in and somebody will identify it for you.

John Muir Award www.jmt.org/jmaward-home.asp 'encourages awareness and responsibility for the natural environment, in a spirit of fun, adventure and exploration.'

National Geographic Kids www.nationalgeographic.co.uk/kids activities, games, stories, pictures and videos.

Natural History Museum www.nhm.ac.uk/kids-only contains videos, information and pictures.

Natures Calendar www.naturescalendar.org.uk/survey/materials.htm is a wide-ranging survey of wildlife to demonstrate climate change. Website contains information and surveys.

Open Air Laboratories www.opalexplorenature.org/surveys take part in a national survey of biodiversity.

Scottish Natural Heritage www.snh.gov.uk/protecting-scotlands-nature/safeguarding-biodiversity contains a lot of information about particular issues. The SNH homepage contains general information and information specific to different sectors such as farming and wildlife sites (SSSIs).

Scottish Seabird Centre www.seabird.org/education.asp contains activities relating to birds and marine life. Also, all you need to know about the seabird centre and arranging a visit.

Scottish Wildlife Trust www.swt.org.uk contains information about species and SWT sites.

Woodland Trust www.woodlandtrust.org.uk/en/learning-kids/Pages/children.aspx activities, factsheets and ideas for children and schools based around trees and woodlands. Also have a look at Nature Detectives - www.naturedetectives.org.uk

Curriculum for Excellence

Summary of Curriculum for Excellence Outcomes and Experiences which may be covered by the teaching of biodiversity, or that relate to biodiversity

The Scottish Seabird Centre has described some biodiversity studies in relation to outcomes and experiences. Go to www.seabird.org/education.asp, and select early years, primary or secondary choices on the left hand side. The table below lists the various outcomes and experiences that could relate to the teaching of biodiversity, depending on subject and course structure.

Planet Earth

Biodiversity and Interdependence

All experiences and outcomes

Topical Science

All experiences and outcomes

Energy Sources & Sustainability

SCN 4-04a SCN 4-04b

Processes of the Planet

SCN 2-05a SCN 3-05b

Chemical Changes

SCN 2-18a SCN 4-18a

Health and Wellbeing

Planning for Choices and Changes

HWB 0-20a / HWB 1-20a

HWB 2-20a / HWB 3-20a / HWB 4-20a

HWB 0-35a

HWB 1-35a / HWB 2-35a

Social Studies

People, Places and Environment

SOC 0-07a

SOC 1-07a

SOC 2-07a

SOC 2-07b

SOC 3-07a

SOC 4-07a

SOC 0-08a

SOC 1-08a

SOC 2-08a

SOC 2-08b

SOC 3-08a

SOC 4-08a

SOC 1-09a

SOC 4-09a

SOC 0-09a

SOC 2-09a

SOC 4-09b

SOC 2-10a

SOC 3-10a

SOC 4-10a

SOC 4-10b

SOC 4-10c

SOC 3-11a

SOC 4-11a

SOC 4-11b

SOC 4-11b

SOC 2-12a

SOC 4-12a

SOC 1-12b

SOC 4-12b

SOC 1-13a

SOC 1-13b

SOC 2-13a

SOC 3-13a

SOC 1-14a

SOC 2-14a

SOC 3-14a

SOC 4-14a

Religious and Moral Education

World Religions selected for study

RME 3-04a

RME 4-09e

Technologies

TCH 0-02a

TCH 2-02a

TCH 3-02a

TCH 4-02a

TCH 3-10a

TCH 3-15b

Numeracy and Mathematics

Data and Analysis - All experiences and outcomes

Shape, Position and Movement

MTH 2-17a

MTH 2-17b

MTH 1-18a

MTH 1-19a

MTH 4-19a

Wider Experiences and Outcomes

Biodiversity activities and projects can also involve artistic expression (e.g. arts and crafts, drama or music) and can help develop and extend English language and literacy skills.

This guide was produced by East Lothian Council
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