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Introduction

Dams to Darnley Country Park is a joint project that is being progressed by Glasgow City and East Renfrewshire councils. The country park is nestled in the green space between Newton Mearns, Darnley and Barrhead.

The Dams to Darnley countryside ranger service provides specialist environmental knowledge and expertise which augments and supports learning. Every year approximately 1,100 children and young people benefit from the **environmental education** and **outdoor learning** opportunities delivered by the service. The countryside rangers lead environmental activities for nursery, primary, secondary and additional support for learning schools, as well as colleges. These activities can be held within the country park, school grounds and local green spaces.

Environmental education increases our understanding of the environment and the challenges that it faces. Crucially, it develops the knowledge and skills needed to take responsibility for addressing these challenges. Environmental education for schools not only engages with children and young people, but also the wider community. It enables connections to be made with local green spaces and the wider countryside and creates a sense of stewardship and responsibility.

Outdoor learning is an important approach in delivering **Curriculum for Excellence (CfE)**. The curriculum presents the opportunity for all children and young people to benefit from outdoor learning experiences.

“Learning in the outdoors can make significant contributions to literacy, numeracy and health and wellbeing. In literacy there are opportunities to use different texts: the spoken word, charts, maps, timetables and instructions. In numeracy there are opportunities to measure angles and calculate bearings and journey times. In health and wellbeing there are opportunities to become physically active in alternative ways and to improve emotional wellbeing and mental health.”
(Curriculum for Excellence through Outdoor Learning, 2010)

With the increasing popularity of the countryside ranger service and the implementation of CfE this pack aims to formalise and promote the environmental education and outdoor learning opportunities associated with the country park. Recognising the limitations of the service's staff resource and the importance of equipping teachers with the necessary skills to deliver high quality outdoor learning, guidance on follow-up and self-led activities is also provided.

Our vision is that the country park countryside ranger service continues to promote the outdoors as an intrinsic part of the formal education process that engages with children and young people and enhances their learning experiences. The countryside rangers will adapt to developments in CfE, ensuring that the service remains relevant and valuable to schools.



Dams to Darnley Country Park

The country park's 550 hectares are made up of a diverse mosaic of landscapes. The open water of the Barrhead dams, the Brock and Aurs burns, the ancient Waulkmill Glen woodland and the wetland, scrub and grassland habitats of Darnley Mill allow for a range of environmental education and outdoor learning opportunities to be explored. Waulkmill Glen is also an important landscape because of its geology and is designated as a Site of Special Scientific Interest. In 2013 Waulkmill Glen and Darnley Mill were additionally designated as a Local Nature Reserve. The country park's landscape is also steeped in history. Over 400 years of rich and varied history can be documented within Dams to Darnley and its surroundings.

Dams to Darnley is being developed through a series of improvements leading to new infrastructure and recreation facilities. The country park contains a seven mile network of paths which run from Balgray Reservoir in the south to Nitshill Road in the north. Country park visitor facilities are also being planned, but at present there is no visitor centre or toilets. The main country park car parks are located at Balgraystone Road, Barrhead and at the World Buffet restaurant, Corselet Road, Darnley.





Environmental education and outdoor learning opportunities

This pack promotes the countryside ranger service as a free resource for local schools. It is structured around CfE and provides lesson plans for **countryside ranger led activities** available within the country park or school grounds (if suitable). Suggested **follow-up activities** are also provided, as well as learning intentions and success criteria to ensure the desired outcomes are achieved. In addition the pack contains more detailed information for lesson plans to support **self-led activities** without a countryside ranger present, either within the country park, school grounds or a local green space.

Copies of this pack have been distributed free to all nursery, primary and secondary schools in East Renfrewshire, together with those within the two adjoining Learning Communities in Glasgow City (Hillpark and St Paul's). **Additional copies of the pack, together with new lesson plans developed over time, can be downloaded from the country park website www.damstodarnley.org/pack**

The environmental education and outdoor learning opportunities offered through the country park will be promoted amongst local schools at the beginning of the academic year and following New Year via direct email. Opportunities will also be highlighted on the country park, East Renfrewshire and Glasgow City councils websites and through social media.

The countryside ranger service encompasses only two members of staff. During periods when staff resources are in high demand priority will be given to schools nearest to the country park, together with those which the countryside rangers have not worked with to date.



Curriculum for Excellence

The introduction and implementation of CfE represents a major change in Scottish education. The new curricular guidelines, brought into Scottish schools in April 2010, operate at all stages (3-18 years) and employ innovative approaches to learning and teaching.

The aim of CfE is to create an education system fit for the modern world and to improve young people's successes, attainment and life opportunities. The new curricular guidelines present the chance for all young people to benefit from first-hand experiences outdoors, be that in school grounds, urban green spaces, countryside or in wilder environments.

“The core values of Curriculum for Excellence resonate with long-standing key concepts of outdoor learning. Challenge, enjoyment, relevance, depth, development of the whole person and an adventurous approach to learning are at the core of outdoor pedagogy. The outdoor environment encourages staff and students to see each other in a different light, building positive relationships and improving self-awareness and understanding of others.”

(Curriculum for Excellence through Outdoor Learning, 2010)

This pack is structured around the curricular design. It focuses upon the experiences and outcomes that can be achieved by each pupil and links to their educational journey.

Curricular design

The values underpinning CfE are wisdom, justice, compassion and integrity. The curricular design is based on the following seven principles:

- Challenge and enjoyment
- Breadth
- Progression
- Depth
- Personalisation and choice
- Coherence
- Relevance

The purpose of CfE is encapsulated in the four capacities which enable each child or young person to be a:

- Successful learner
- Confident individual
- Responsible citizen
- Effective contributor

Every child is entitled to have a broad general education from early years until the completion of the third level experiences and outcomes. By recognising and planning learning around different contexts and experiences CfE aims to make better connections across learning.



Experiences and outcomes

The term 'experiences and outcomes' is significant in that it underlines the need for pupils to be both actively engaged in their learning (**the experience**) and to attain an appropriate level of understanding (**the outcome**). The term implies that active engagement is linked to deep learning. Taken as a whole, the experiences and outcomes embody the attributes and capabilities of the four capacities.

There are eight curriculum areas:

- Expressive arts
- Health and wellbeing
- Languages
- Mathematics
- Religious and moral education
- Sciences
- Social studies
- Technologies

There are also separate sections for literacy, numeracy and aspects of health and wellbeing which are the responsibility of all teachers and adults involved in the education of pupils.

Individuals progress through levels of learning based on statements of experiences and outcomes.

Level	Stage
Early	Pre-school years and P1, later for some
First	To the end of P4, but earlier or later for some
Second	To the end of P7, but earlier or later for some
Third and fourth	S1 to S3, but earlier for some



Curriculum area and lesson plans

This pack focuses on the four curriculum areas listed below. Each area is referenced to CfE, including the relevant experiences and outcomes code. The selected areas are the main environmental education themes that schools can undertake on visits to the country park. The pack's content is not exhaustive and additional lesson plans will be developed which can be added to it. Lesson plans can also be developed, on request, in the format outlined in this resource.

- **Sciences: Planet Earth: Biodiversity and interdependence.**
SCN 1-01a, 2-01a, 3-01a, 4-01a
- **Sciences: Planet Earth: Biodiversity and interdependence.**
SCN 1-02a, 2-02a, 3-02a
- **Sciences: Planet Earth: Processes of the planet.**
SCN 3-05b, 4-05b
- **Sciences: Biological systems: Body systems and cells.**
SCN 0-12a, 1-12b

For each of the experiences and outcomes the code is referenced along with brief guidance on the type of learner and approach.

The experiences and outcomes are then interpreted to form high quality learning intentions and success criteria. This ensures the outcomes are manageable and can be achieved.

Following on from this the lesson plans outline the main countryside ranger led activities that can be undertaken within the country park, together with suggested follow-up activities. Some of the activities can also be led by the countryside rangers within school grounds or local green space (if suitable). Further guidance on this should be sought from the countryside ranger service.

Finally, the pack details information and activities to support self-led groups.

The lesson plans and the activities they contain are not prescriptive; they can be adapted to fit with a group's learning stage or to meet specific needs or requirements.

To arrange a countryside ranger led visit to the country park, your school grounds or local green space simply complete and return the booking form (appendix 1). Reference to the preferred activities and experiences and outcomes codes, as described in the pack, should be included in the form.



Planet Earth: Biodiversity and interdependence

SCN 1-01a, 2-01a, 3-01a, 4-01a

Reflection on prior learning should be done in school before a visit. Please inform the countryside rangers on prior learning before a visit using the school booking form (appendix 1).

Location: Dams to Darnley Country Park or school grounds if suitable.

Types of learner: All catered for (visual, auditory and tactile/kinaesthetic).

Types of approach: Active, cooperative/collaborative, creative and outdoor learning.

Curricular area covered: Literacy, numeracy, wellbeing and sciences.

Learners achieve (skills, knowledge, understanding and attitudes):

First level - I can distinguish between living and non-living things. I can sort living things into groups and explain my decisions. [SCN 1-01a](#)

Second level - I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction. [SCN 2-01a](#)

Third level - I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. [SCN 3-01a](#)

Fourth level - I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. [SCN 4-01a](#)

First level 1-01a

I can distinguish between living and non-living things. I can sort living things into groups and explain my decisions SCN 1-01a

Learning intentions and success criteria

Learning intentions:

- State at least two differences between living and non-living things and give examples of them.
- Sort living things into groups and explain the decisions.

Success criteria:

- I can state at least two differences between living and non-living things.
- I can give examples of living things.
- I can give examples of non-living things.
- I can divide living things into different groups.
- I can explain my reasons for dividing living things into different groups.

Lesson plan

Countryside ranger led activities

1. Discuss the difference between living and non-living things. Set up an 'Un-nature Trail'. Walk and get the group to look for living and non-living things. Discuss what is seen and why it is living or non-living. Call out things and get the children to decide if they are living or non-living, then run to the appropriate place. Time: 40mins.
2. Sort living things. Hide picture cards in an area. Ask the children to find the cards and put them into buckets: plants, mammals, amphibians, insects and birds. Discuss one or two main differences depending on the children's interests e.g. breeding, body cover or breathing. Time: 30mins.
3. Play 'Team Animals'. As a group get the children to create an animal with their bodies and ask the other teams to guess what they are. Time: 20mins.
4. Ask each child to name one living or non-living thing. Discussion and questions. Time: 10mins.

Suggested follow-up activities

1. You can sort items into living and non-living things using flash cards or worksheets in the classroom. Ask children to organise the cards into groups and explain the reasons why.
2. Match pictures of insects, mammals, birds and amphibians to attributes e.g. can live in water, can fly, lays eggs or has hair.
3. In groups make a snap game with pictures of insects, mammals, birds, amphibians and non-living things.

First level 1-01a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Discuss the difference between living and non-living things. Set up an 'Un-nature Trail'. To do this place non-natural items in a short section of woodland or scrub next to a path. For example an umbrella, glove, litter, toy, etc. Walk and get children to look for 'un-nature' things. Discuss what is seen and why it is non-living/'un-nature'; everything else is nature. Call out things and get the children to decide if they are living or non-living. Select obvious locations at either side of an open area, for example by using specific trees. Identify one location as being for living things and the other for non-living. The children have to decide if what you call out is living or non-living and then run to the appropriate location. Time: 40mins.
2. Sort living things into categories. Hide picture cards in an area. Ask the children to find the cards and put them into buckets (plants, mammals, amphibians, insects and birds). Discuss one or two of the main differences depending on the children's interests e.g. breeding, body cover or breathing. Time: 30mins.
3. Play 'Team Animals'. Divide your class into groups of four to six children and get them to pick an animal found in their local environment. As a group get the children to create the animal with their bodies and move like it. Ask the other teams to guess what they are. Time: 20mins.
4. Ask each child to name one living or non-living thing and invite questions. Time: 10mins.

Equipment:

- Pictures of living and non-living things.
- Laminates saying 'living' and 'non-living'.
- Buckets and picture cards of plants, mammals, amphibians, insects and birds.

Second level 2-01a

I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction. **SCN 2-01a** (This section covers the first half of the experiences and outcomes in bold italic text.)

Learning intentions and success criteria

(Lessons will be either plant or animal based.)

Learning intentions:

- Animals
- Explain the differences between a vertebrate and an invertebrate.
 - Divide mini-beasts into different groups and understand why it has been done.
 - Give at least two reasons why mini-beasts are important for the environment.
- Plants
- Explain the structure and seed/spore dispersal of plants.
 - Describe the benefits to pollination of flowering plants and be aware that flowering plants were the most recent to evolve.

Success criteria:

- Animals
- I can explain the difference between a vertebrate and an invertebrate.
 - I can divide mini-beasts into different groups based on their number of legs.
 - I can give at least two reasons why mini-beasts are important to the environment.
- Plants
- I can explain structure in plants.
 - I can explain seed/spore dispersal in plants.
 - I can describe the benefits to pollination of flowering plants.
 - I know that flowering plants were the most recent to evolve.

Lesson plan

Countryside ranger led activities

Animals

1. Define and explain vertebrates and invertebrates. Explain that invertebrates/mini-beasts are very diverse. Go on a mini-beast hunt and classify animals based on their number of legs. Ask the group to come up with one other way of classifying animals. Time: 30mins.
2. Play 'Team Animals'. As a group get the children to create a mini-beast with their bodies and move like it. Get the other groups to guess what they are. Time: 20mins.
3. Ask why mini-beasts are so important and reinforce classification based on features. Time: 10mins.

Plants

1. Define vascular and non-vascular systems. Look for vascular and non-vascular plants and their seeds/spores. Discuss seed/spore dispersal methods. Time: 30mins.
2. Discuss flowering and non-flowering plants. Explain the benefits of flowering plants to pollination. Play the pollination relay game. Time: 20mins.
3. Review learning and discuss the differences between vascular and non-vascular plants and their evolutionary timescales. Using picture cards of vascular and non-vascular plants get the children to place the cards on an evolutionary time line (rope). Time: 20mins.

Second level 2-01a

Suggested follow-up activities

Animals

1. Look at ways to classify vertebrates: birds, mammals, amphibians and fish. Consider reproduction, warm or cold blooded, if they lay eggs or if they have hair.
2. Have a class list of animals children have seen locally and keep it updated. Get children to classify the animals they have seen.

Plants

1. Do 'Colourful Carnations'. Get two white carnations and put one in a vase with water and green food dye and one in a vase with water and red food dye. The flowers will turn their respective colour. This demonstrates the movement of water up the vascular system to the petals.
2. Collect a fern with sori visible and place this side down on a sheet of white paper for a week indoors. Sori are small dot-like marks on the underside of a fern where the spores come from. Lift the fern and you will see the spores which have fallen from the sori.
3. Look at the differences between the four main divisions of plants: bryophytes, pteridophytes, gymnosperms and angiosperms. Divide the class into groups, give each group a division of plants and ask them to research its definition. The children have to find at least five pictures of their type of plant. Each group then presents their findings. The pictures can be gathered for a matching or snap game.

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Second level 2-01a

Self-led activities

Animals

1. Define and explain vertebrates and invertebrates with your group. Explain that invertebrates/mini-beasts are very diverse. Go on a mini-beast hunt and classify animals based on their number of legs. Ask the group to come up with one other way of classifying animals e.g. if it can fly, number of body parts, if it has a shell. Time: 30mins.

2. In groups of four to six ask the children to choose a mini-beast. Ask each group to create and move like their mini-beast with their bodies. Get the other groups to guess what they are. Time: 20mins.

3. Discuss the importance of mini-beasts with your group and reinforce classification based on features. Time: 10mins.

Plants

1. With your group define vascular (pipe-like tissue that moves water and nutrients through plants, similar to veins in animals) and non-vascular (this pipe-like tissue is not present) systems. Look for vascular (trees and flowering plants) and non-vascular (mosses and ferns) plants and their seeds/spores. Discuss seed/spore dispersal methods. Time: 30mins.

2. Discuss flowering and non-flowering plants with your group. Explain the benefits of flowering plants to pollination. Play the pollination relay game. Divide your group into two teams; each team has a pipette and jar (place the jar on top of a picture of a bee hive). Set out 12 pictures of flowers across an open flat area. Put coloured liquid (such as diluting juice) into six cups and in another six put a different coloured juice. Make sure the total amount of each coloured liquid is the same. The idea of the game is that the children are bees and have to collect their designated coloured nectar from the cups on top of the flower pictures using the pipette and bring it back to their hive. It is a relay race so decide upon a suitable amount of time dependant on how much liquid is in the cups and making sure that every child gets a couple of shots. The winning team is the one with the most nectar in their hive when time is up. At the end of the game highlight that pollination is a by-product of collecting nectar. Time: 20mins.

3. Review learning and discuss differences in plants over evolutionary timescales. Using picture cards of vascular and non-vascular plants get the children to place the cards on an evolutionary time line (rope/string/wool). Time: 20mins.

Equipment:

- Animals - bug pots, trays, magnifying glasses and bug ID sheets.
- Plants - pictures of: vascular system, seed dispersal methods, the evolution of plants, pollination and bee hives. Picture cards of vascular, non-vascular and flowering plants. Two jars, two pipettes, plastic cups, laminated flowers and two types of coloured water. Rope, string or wool.

Second level 2-01a

Second level - I can identify and classify examples of living things, past and present, to help me appreciate their diversity. ***I can relate physical and behavioural characteristics to their survival or extinction.*** SCN 2-01a (This section covers the second half of the experiences and outcomes in bold italic text.)

Learning intentions and success criteria

Learning intentions:

- Describe the main different physical and behavioural characteristics of a type of animal and explain why one type is more successful than the other in certain environments.
- Give informed suggestions as to how we can protect threatened species and state why it is important to do so.

Success criteria:

- I can describe the main physical characteristics of red squirrels.
- I can describe the main behavioural characteristics of red squirrels.
- I can describe the main physical characteristics of grey squirrels.
- I can describe the main behavioural characteristics of grey squirrels.
- I can explain why the grey squirrel is more successful and the red squirrel less successful in certain environments.
- I can give informed suggestions on ways we can protect the red squirrel.
- I know why it is important to protect the red squirrel.

Lesson plan

Countryside ranger led activities

1. Grey versus red squirrels. Discuss the different physical and behavioural characteristics of grey and red squirrels. Look for dreys. Time: 15mins.
2. Play a game of 'Squirrel Nuts'. Children have to write their name on a small piece of paper, fold it and hide it within a designated area. They return to this area at the end of the session and are asked to find their 'nuts' again. If they find them they have food for winter, if not trees grow. Time: 15mins.
3. Play a running around game based on the survival of grey versus red squirrels. Discuss the implications of the game's results. Time: 40mins.
4. Review learning and discuss ideas for conserving red squirrels. Give five possible means of conservation, two of which are unfeasible. Children discuss why they are unfeasible. Time: 15mins.

Suggested follow-up activities

1. Make graphs of the number of grey and red squirrels recorded in Scotland over the years since the introduction of pox virus in 2005.
2. In groups choose one other invasive species in the UK e.g. Japanese knotweed, crayfish, American mink, giant hogweed or rhododendron. Research the negative impact on local species and suggest one or two ideas for their control.
3. Make a pine cone squirrel:
www.familycrafts.about.com/od/squirrelcrafts/ss/pcsquirrel.htm

Second level 2-01a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described above but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Discuss the different physical and behavioural characteristics of grey and red squirrels with your group. Look for dreys in trees; these are quite obvious large, circular nests near the trunk of the tree. Time: 15mins.
2. Play a game of 'Squirrel Nuts' with your group. Children have to write their name on a small piece of paper, fold it and hide it within a designated area. They return to this area at the end of the session and are asked to find their 'nuts' again. If they find them they have food for winter, if not trees grow. Time: 15mins.
3. Play a game based on the survival of grey versus red squirrels. Pick three to four children to be grey squirrels, these should be the fastest runners to represent the bigger grey squirrels. Everyone else is a red squirrel. Set a rope out in a large circle and get all the red squirrels to go into the circle. This represents their conifer woodland and is 'den'. The red squirrels have to leave the woodland to forage as the area is too small to support all of them. To play the game get the red squirrels to forage outside of the woodland, then shout 'grey squirrels'. At this point all the reds have to get back to the woodland/den before they are tagged by the greys. If they are tagged they have caught the pox virus and are out of the game. Now make the den smaller by moving the rope and explain that a road has been built through the woodland so some trees have been cut down, highlighting that red squirrels are often killed by cars. Get the reds to forage again outside the woodland and as before repeat the game by calling 'grey squirrels'. Now reduce the rope further and say that more trees have been cut down to build housing. Again get the reds to forage and repeat the game. Now that there is housing domestic cats are in the area which can kill red squirrels. Less of the forest is now safe for the red squirrels, so reduce the rope further. Get the reds to forage and repeat the game. Finally a supermarket has been built for the houses and all the trees have been cut down to fit it in, so remove the rope/den completely. Finally get the reds to forage, repeating the game until they are all caught. Discuss the implications of the game. Time: 40mins.
4. Review learning and discuss ideas for conserving red squirrels with your group. For example, give five possible means, two of which are unfeasible. Discuss why they are unfeasible with the children. Time: 15mins.

Equipment:

- Squares of paper and pens.
- Rope.

Third level 3-01a

I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. SCN 3-01a

Learning intentions and success criteria

(Lessons will be either plant or animal based.)

Learning intentions:

- Plants
- Explain what a line transect is and why it is used.
 - Identify at least four common plants in my local area.
 - Explain what an ecological niche is.
 - Give examples of specific plants and how they are adapted to their ecological niche.
- Animals
- Explain survey methods for grassland, woodland and/or freshwater invertebrates and how the survey methods are suited to different environments.
 - Identify some specific invertebrates in the local area and explain how they are adapted to their ecological niche.
 - Explain what an ecological niche is.

Success criteria:

- Plants
- I can explain, in my own words, what a line transect is.
 - I can explain what a line transect is.
 - I can identify at least four common plants in my local area.
 - I can explain what an ecological niche is.
 - I can give examples of specific plants and how they are adapted to their ecological niche.
- Animals
- I can explain survey methods for grassland invertebrates.
 - I can explain survey methods for woodland invertebrates.
 - I can explain survey methods for freshwater invertebrates.
 - I can explain how each survey method is suited to its environment.
 - I can identify some common invertebrates in my local area.
 - I can explain what an ecological niche is.
 - I can give examples of specific invertebrates in my local area.
 - I can explain how these invertebrates are adapted to their ecological niche.

Lesson plan

Countryside ranger led activities

Plants

1. Do line transects and identify certain common plants along a gradient e.g. from wet to dry ground or grassland to scrub. Determine the differences. Time: 40mins.
2. Use examples of plants found to demonstrate habitat-related plant adaptations for nutrients, light, water, soil conditions, pollination and seed dispersal, as a means of exploiting an ecological niche. Time: 15mins.

Animals

1. Compare grassland and woodland invertebrates. Use sweep nets in grasslands and hand search in woodland. Use woodland and pond habitats if conditions are wet. Time: 45mins.
2. Use examples of invertebrates found to demonstrate habitat-related adaptations for food, terrain, camouflage, defence and life cycle, as a means of exploiting an ecological niche. Time: 15mins.

Third level 3-01a

Suggested follow-up activities

Plants

1. Design your own plant that would be adapted to set conditions e.g. warm climate, insect pollinators or little rainfall.
2. In groups investigate a non-native invasive species e.g. Japanese knotweed or giant hogweed. What makes each plant so successful? What negative effects is it having on local wildlife? How can we control its spread? Each group then delivers a Powerpoint presentation on their plant.

Animals

1. Design your own invertebrate that would be adapted to set conditions e.g. low temperatures, exposed moorland or wet environment.
2. In groups investigate a non-native invasive invertebrate e.g. New Zealand flatworm, American signal crayfish, killer shrimp or zebra mussel. What makes your invertebrate so successful? What negative effects is it having on local wildlife? How can we control its spread? Each group then delivers a Powerpoint presentation on their invertebrate.



Third level 3-01a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

Plants

1. Do line transects measuring change along a gradient. Identify certain common plants along a gradient e.g. from wet to dry ground or grassland to scrub. Determine the differences in plants found and how they are suited to their place on the gradient. Time: 40mins.
2. Use examples of plants found along the transects to demonstrate habitat-related adaptations for nutrients, light, water, soil conditions, pollination and seed dispersal, as a means of exploiting an ecological niche. Time: 15mins.

Animals

1. Compare grassland and woodland invertebrates with your group. Use sweep nets in grasslands, emptying their contents onto a white sheet. Hand hunt in woodland using bug pots. Use woodland and pond habitats if wet. When pond dipping use plastic spoons to catch the bugs once transferred from nets to trays and make sure that if children have any open cuts on their hands they wear non-latex gloves. Time: 40mins.
2. Use examples of animals found to demonstrate habitat-related adaptations for food, terrain, camouflage, defence and life cycle, as a means of exploiting an ecological niche. Time: 15mins.

Equipment:

- Plants - line transects (these can be made from plant canes and string), plant ID guides, pencils, clipboards and survey sheets.
- Animals - bug pots, trays, magnifying glasses, bug ID sheets, sweep nets, white sheet, pond nets, plastic spoons and non-latex gloves. Equipment required will depend on which two habitats you are comparing.

Fourth level 4-01a

I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. SCN 4-01a

Learning intentions and success criteria

Learning intentions:

- Explain an animal's survival requirements and give examples of how they adapt to survive in their environment.
- Give informed suggestions on the impact of human population growth on animal population in the local environment.
- Give examples of natural hazards that may impact on an animal population and how this in turn will have further biodiversity implications.

Success criteria:

- I can explain a toad's survival requirements.
- I can give examples of how toads adapt to survive within their environment.
- I can give informed suggestions on the impact of human population growth on a toad population in the local environment.
- I can give examples of natural hazards that may impact on the toad population.
- I know and understand the term biodiversity.
- I can explain how natural hazards can have further biodiversity implications in a local environment.

Lesson plan

Countryside ranger led activities

1. Look for toads/spawn/tadpoles or show a hibernaculum (a specially built soil mound for wintering amphibians) depending on the time of year. Discuss requirements and adaptations for survival: toxicity, camouflage, hibernation, explosive breeding and defence techniques. Time: 30mins.
2. Depending on the time of year, play the camouflage game in either grassland or woodland. Half the group use natural items found in the area to camouflage themselves. They then hide and the other half have to try to find them within an allotted time. Time: 30mins.
3. Consider the impact of a growing human population on toads in the local area. What natural hazards may impact upon toad populations? What can we do to protect them? Time: 15mins.

Suggested follow-up activities

1. Investigate ranavirus and the impact this has/potentially will have on the amphibian population. Suggest at least two ways we can help.
2. Using old maps and statistics plot human population increases in the local area. Map areas of former green space that have been developed. Look at the fragmentation of habitats and map and design new wildlife corridors. A good website for overlaying maps is www.maps.nls.uk/
3. Investigate what would happen if toads were removed from the local food web. What impact would this have on the other plants and animals? Give three examples of potential impacts. Remember to think about the complete life cycle. Deliver a Powerpoint presentation on the findings.

Fourth level 4-01a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Look for toads/spawn/tadpoles or show a hibernaculum (a specially built soil mound which provides a wintering location for amphibians). The time of year will determine what you will be able to see. With your group discuss requirements and adaptations for survival: toxicity, camouflage, hibernation, explosive breeding and defence techniques. Time: 30mins.
2. Play the camouflage game in either grassland or woodland. Half the group use natural items found in the area to camouflage themselves. They then hide and the other half have to try to find them within an allotted time. Time: 30mins.
3. With your group discuss the impact of a growing human population on toads in the local area. What natural hazards may impact upon toad populations? What can we do to protect them? Time: 15mins.

Equipment:

- Paper, tape, stapler and netting of some sort to weave foliage in for camouflage.
- Pictures of toad, spawn, tadpoles, life cycle and toad defensive pose.



Planet Earth: Biodiversity and interdependence

SCN 1-02a, 2-02a, 3-02a

Reflection on prior learning should be done in school before a visit. Please inform the countryside rangers on prior learning before a visit using the school booking form (appendix 1).

Location: Dams to Darnley Country Park or school grounds if suitable.

Types of learner: All catered for (visual, auditory and tactile/kinaesthetic).

Types of approach: Active, cooperative/collaborative, creative and outdoor learning.

Curricular area covered: Literacy, numeracy, wellbeing and sciences.

Learners achieve (skills, knowledge, understanding and attitudes):

First level - I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food. [SCN 1-02a](#)

Second level - I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area. [SCN 2-02a](#)

Through carrying out practical activities and investigations, I can show how plants have benefited society. [SCN 2-02b](#)

Third level - I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. [SCN 3-02a](#)

First level 1-02a

I can explore examples of food chains and show an appreciation of how animals and plants depend on each other for food. SCN 1-02a

Learning intentions and success criteria

Learning intentions:

- Explore examples of food chains and demonstrate an appreciation of how animals and plants depend on each other for food.

Success criteria:

- I can explain, in my own words, what a food chain is.
- I can give an example of at least a four step food chain.
- I can explain, in my own words, the meaning of producer.
- I can explain, in my own words, the meaning of a primary consumer.
- I can explain, in my own words, the meaning of a secondary consumer.
- I can explain, in my own words, the meaning of a tertiary consumer.
- I can explain, in my own words, what a top predator is in relation to food chains.
- I can give an example of how plants and animals rely on each other.

Lesson plan

Countryside ranger led activities

1. Mini-beast hunt and food chain discussion. Get the children to sort what they find during their hunt into simple categories. Discuss food chain categories e.g. leaves (producers), leaf eaters (primary consumers), bug eaters (secondary consumers), birds (tertiary consumers) and cats (top predator). Time: 30mins.
2. Play the ball of wool food chain game to show food chain connections. This shows repercussions across the whole system. Time: 15mins.
3. Children are given a badge with an animal or plant that forms part of a simple food chain. They have to act like that animal or plant and join together in groups to form a simple food chain without talking to each other. For example, a plant, slug, bird and cat should be in a group of four by the end of the game. Use questioning to check learning. Time: 15mins.

Suggested follow-up activities

1. Make mini-beast homes for your school grounds:
www.apps.rhs.org.uk/Schoolgardening/uploads/documents/making_a_bug_hotel_770.pdf
2. Carry out a topic on snails (lesson plans are available on request from the countryside ranger service).
3. Make a food chain/web collage for the classroom from plants and animals you see in your school grounds.

First level 1-02a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Mini-beast hunt and food chain discussion. Send your group off on a mini-beast hunt in a suitable area. Get the children to sort what they find into simple categories such as what they eat or number of legs. Discuss food chain levels: leaves (producers), leaf eaters (primary consumers), bug eaters (secondary consumers), birds (tertiary consumers) and cats (top predator). Relate this to some of the mini-beasts found and what might eat them in the surrounding area. Time: 30mins.

2. With your group play the ball of wool food chain game to show food chain connections. Each child gets a badge with an animal or plant that makes up a simple food chain. The children then stand in a circle. Starting with the top predator (e.g. buzzard) throw the ball of wool down the food chain until it reaches a plant (children should hold on to the unravelled wool before throwing the ball on; this shows the links). Then the plant throws the ball of wool to something that would eat it and up the food chain again until it gets to the top predator. Repeat this until all children have hold of the wool. You should now have a spider's web effect of wool across the centre of the circle. To demonstrate connections further say that the top predator has been poisoned. Get the top predator to sit down (keeping hold of the wool) and ask the group who felt a pull on their wool. Repeat this for different scenarios. This shows repercussions across the whole system. Time: 15mins.

3. Children are given a badge with an animal or plant that forms part of a simple food chain. The children have to act like their animal or plant and join together in groups to form that simple food chain without talking to each other. For example, a plant, slug, bird and cat should be in a group of four by the end of the game. Use questioning to check learning. Time: 15mins.

Equipment:

- Bug pots, trays, magnifying glasses and bug ID sheets.
- Laminates of producers, primary consumers, secondary consumers, tertiary consumers and top predators.
- Ball of wool.
- Badges of plants and animals (producers, primary consumers, secondary consumers and top predators).

Second level 2-02a

I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area. SCN 2-02a

Learning intentions and success criteria

Learning intentions:

- Construct a food chain containing at least four plants and animals.
- Draw food webs with multiple plants and animals.
- Explain what mini-beasts need for survival and make suggestions on how to conserve them and explain why this is important.

Success criteria:

- I can make a food chain containing at least four plants and animals.
- I can draw a food web of multiple plants and animals.
- I can explain what mini-beasts need for survival.
- I can make suggestions on how to conserve mini-beasts.
- I can explain why it is important to conserve mini-beasts.

Lesson plan

Countryside ranger led activities

1. Have a short mini-beast hunt, then give each child an animal or plant card. They then have to form a food chain with each other (without speaking) by moving like their animal or plant. Time: 30mins.
2. Play the food chain frenzy game. The purpose of this game is to consolidate ideas about food chains and to collect data about population numbers. Time: 20mins.
3. Build mini-beast homes using bamboo canes/woven twigs or mini-beast piles. Time: 20mins.

Suggested follow-up activities

1. Design a wildlife area for your school grounds. If you already have one develop it a little; plant some wildflower seeds, build a mini-beast hotel, put out bird feeders or build a toad or hedgehog hibernation area:

www.apps.rhs.org.uk/Schoolgardening/uploads/documents/making_a_bug_hotel_770.pdf
www.ecokids.ca/pub/fun_n_games/printables/activities/assets/science_nature/toad_home.pdf
www.bbc.co.uk/breathingplaces/hedgehog_home/

2. Make a food chain/web craft activity:

www.rspb.org.uk/youth/makeanddo/activities/foodchainmobile.aspx
www.bbsrc.ac.uk/web/FILES/Resources/discovery5.pdf
www.nature-watch.com/food-chain-activity-kit-p-40.html

3. Do a survey of wildlife in your school grounds e.g. bird numbers and species. Then make improvements such as putting out feeders and baths. Repeat the survey to see if the improvements have had any impact.

4. Make a wormery:

www.thekidsgarden.co.uk/MakingAWormery.html

Second level 2-02a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).



Second level 2-02a

Self-led activities

1. Have a short mini-beast hunt in a suitable area then give each child an animal or plant card. The children have to act like their animal or plant and join together in groups to form that simple food chain without talking to each other. For example, a plant, slug, bird and cat should be in a group of four by the end of the game. Time: 30mins.

2. Play the food chain frenzy game. The purpose of this game is to consolidate ideas about food chains and to collect data about population numbers. Please note the following instructions may appear complex but do persevere because this activity is straightforward and very effective in communicating quite sophisticated ideas to a young audience.

1. Divide the pupils into three equally sized groups: grass, rabbits and foxes.
2. 'Grass' has to remain stationary and is identified by pupils wearing a 'blade' tucked into their waistbands. Blades are made from strips of material or sports sashes. 'Grass' can be eaten by 'rabbits' who steal their 'blades'.
3. The 'rabbits' wear 'tails' tucked into their waistbands. 'Tails' are made from strips of material or sports sashes of a different colour. During the game 'rabbits' should move around and try to eat as much as possible by going to the 'grass' and stealing their 'blades'. 'Rabbits' can be eaten by 'foxes' who steal their 'tails'.
4. 'Foxes' are not given a sash to wear and must chase as many 'rabbits' as possible and eat them by stealing their 'tails'.
5. Begin and end the game by blowing a whistle.
6. After the first round the role that pupils assume alters as shown in the table below.

	If you have been eaten you become	If you have not been predated upon and have eaten a meal	If you have not been predated upon and have not eaten any prey
Grass	Rabbit	No change	Grass
Rabbit	Fox	Rabbit	Grass
Fox	No change	Fox	Grass

7. Record the new number of each type of organism (grass, rabbit and fox) on a record sheet.
8. Several short rounds of this game should be played and the new numbers of organisms recorded after each.
9. The population numbers for each organism can then be plotted on line graphs and compared. What patterns can you see? Discuss. Time: 20mins.

3. Build mini-beast homes by piling together twigs and dead leaves into bundles. Tie these together with garden string. These can either be hung from trees or hidden under bushes. Time: 20mins.

www.lowcarbon.co.uk/education/mini-beast-homes

Equipment:

- Bug pots, trays, magnifying glasses and bug ID sheets.
- Food chain animal or plant cards.
- Garden string and scissors.
- Whistle.
- Strips of material or sashes for food chain frenzy game (10 of each colour).

Second level 2-02b

Through carrying out practical activities and investigations, I can show how plants have benefited society. SCN 2-02b

Learning intentions and success criteria

Learning intentions:

- Explain where the constituents of one's last meal came from.
- Give three specific examples of local plants that can be used for food.
- List multiple ways plants are used in our society today along with at least three specific examples.

Success criteria:

- I can explain where the constituents of my last meal came from.
- I can give at least three specific examples of local plants that can be used for food.
- I can list multiple ways plants are used in our society today.
- I can give at least three specific examples of the use of plants in our society.

Lesson plan

Countryside ranger led activities

1. Discuss where the group's food comes from. Ask what they have had for breakfast and work backwards. Time: 10mins.
2. Depending on the time of year forage for wild food. In spring/summer look for ramsons, primrose, summer lousewort, cuckoo flower, hawthorn, dandelion, cleavers, jack by the hedge and lime. In autumn search for berries, seeds and nuts. Put what is found in a bowl and explain this is what our ancestors would have gathered for food. Ask the group what their favourite food is and work backwards to see how it is related to a plant. Time: 30mins.
3. With the group make cord out of nettles (clothing) or build a den (shelter). Time: 30mins.
4. Discuss other ways that plants have benefited society: fuel (cooking, power and warmth), medicinal (nettles, hawthorn, foxglove, poppy, willow and daffodil) and shelter. Time: 5mins.
5. Put the plants gathered during your forage beside the correct Thank You card e.g. Thank You for providing medicines, food, clothing, power, shelter or beauty. Time: 15mins.

Suggested follow-up activities

1. Make recycled paper:
www.makingyourown.co.uk/make-your-own-recycled-paper.html
2. Investigate willow and all its uses: cricket bats, woven chairs, medicine and fencing.
Make a willow star:
www.apps.rhs.org.uk/schoolgardening/uploads/documents/2010_template_Willow_Star_1186.pdf
3. Make a list of all the things in your classroom that have come from plants.

Second level 2-02b

Self-led information

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Self-led activities

1. Discuss where your group's food comes from. Ask what they have had for breakfast and work backwards until you get to plants (even if they had meat the animals would have eaten plants).
Time: 10mins.

2. Depending on the time of year forage for wild food. In spring/summer look for ramsons, primrose, summer lousewort, cuckoo flower, hawthorn, dandelion, cleavers, jack by the hedge and lime. In autumn search for berries, seeds and nuts. Put what you find in a bowl and explain this is what our ancestors would have gathered for food. Avoid fungi, many species are poisonous. Ask your group what their favourite food is and work backwards to see how it is related to a plant. Time: 30mins.

3. Make cord out of nettles (if in season) to demonstrate that they can be used to make clothing or to help build shelters. Using gloves each child picks a tall nettle. They remove the leaves and run their gloves up and down the stem to crush the stingers. The nettle is then flattened, especially at the nodes. Split the nettle open and lay it flat. Bend it in the middle so that the pith inside splits upwards. Strip the pith from the fibres. Separate fibres, select two and twist together, fold in half and form a natural twist, keep twisting and encourage this natural twist. Twist the end fibres again and continue. Time: 30mins.
www.youtube.com/watch?v=IQHvqWCN5Eo

4. Lead a discussion around the other ways that plants have benefited society. Get your group to think about their clothing, cooking and homes. You can discuss fuel (cooking, power and warmth), medicine (nettles, hawthorn, foxglove, poppy, willow and daffodil) and shelter. Round up the discussion and check learning through questioning. Time: 15mins.

Equipment:

- Bags for collecting plants.
- Gloves.

Third level 3-02a

I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. SCN 3-02a

Learning intentions and success criteria

Learning intentions:

- Explain what photosynthesis is and the main processes and chemicals involved in it.
- Suggest ideas for experiments to illustrate the effect of photosynthesis on plant growth and provide reasons why plants are vital for life on Earth.

Success criteria:

- I can explain what photosynthesis is.
- I can explain the main processes involved in photosynthesis.
- I know the main chemicals involved in photosynthesis.
- I can suggest ideas for experiments to show the effect of photosynthesis on plant growth.
- I can give reasons why plants are vital for life on Earth.

Lesson plan

Countryside ranger led activities

1. Explain photosynthesis using pictures. Look at leaf structure and colour using picture frames and hand lenses. Time: 20mins.
2. Play 'Photosynthesis Tag'. This is a high energy running game. Time: 20mins.
3. Hide cards showing everything that plants need to photosynthesise. Students then have to find cards showing all these requirements in a certain time to survive. Time: 15mins.
4. Divide the students into an even number of groups. Each group is given five minutes to make up a three question quiz about photosynthesis. Pair the groups up and get them to ask/answer questions. Time: 10mins.

Suggested follow-up activities

1. In the classroom carry out experiments based on photosynthesis:
www.ehow.com/info_8773304_photosynthesis-experiments-kids.html
www.biotopics.co.uk/plants/psfac2.html
2. Get your students to do calculations to find out how much carbon dioxide they each produce when breathing and how much oxygen they will require over a lifetime and how many trees this equates to. They can start to factor in other things in their lives that produce carbon dioxide such as food production, clothing, transport and buildings.
3. Look further into chlorophyll and why leaves change colour in autumn. Do an experiment to remove the colour from a leaf:
www.buzzle.com/articles/how-to-extract-chlorophyll.html

Third level 3-02a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Explain photosynthesis using pictures (take simple diagrams from the internet and laminate). Look at leaf structure and colour using picture frames (pieces of stiff cardboard cut into a picture frame shape). Leaves are placed in the centre of the frame and held up to the light so that you can see their veins. Get your students to select a piece of leaf, put it in the frame and hold it up to the light. You can also use a hand lens to look at the veins. Get your students to describe what they see. Time: 20mins.

2. Play 'Photosynthesis Tag'. This is a high energy game that can be played in the country park, school gym or playground. Randomly choose four students to be 'sunlight' and another four to be the taggers. Every other child in the game is a 'flower'. Healthy 'flowers' run around to indicate their health and energy. If they are tagged they must bend at the waist and drop their hands to the ground. This is the wilting state. A wilting 'flower' cannot move until they are tagged by a 'sunlight' player. Once a player is tagged they can run around free again. This simulates the health benefits a flower receives from sunlight. If a 'sunlight' player is tagged they are out of the game and must sit in a designated shady area, but if they are tagged by two 'flowers' at the same time they can join in again. Time: 20mins.

3. Hide cards over a designated area showing everything that plants need to photosynthesise. You will need to print out and laminate three cards for each child representing sunlight, water and carbon dioxide. Your students then have to find cards showing all three requirements they need to survive in a certain time. Time: 15mins.

4. Round up the key points of photosynthesis. Get your group to think of experiments they could do to check that a plant needs these things to grow: nutrients, warmth, sunlight and water. Check learning through questioning. Time: 10mins.

Equipment:

- Laminated photosynthesis diagrams, picture frames (cut out from stiff cardboard) and hand lenses.
- A set of three laminated photosynthesis cards for every student; one of each card representing sunlight, water and carbon dioxide.



Planet Earth: Processes of the planet

SCN 3-05b, 4-05b

Reflection on prior learning should be done in school before a visit. Please inform the countryside rangers on prior learning before a visit using the school booking form (appendix 1).

Location: Dams to Darnley Country Park or school grounds if suitable.

Types of learner: All catered for (visual, auditory and tactile/kinaesthetic).

Types of approach: Active, cooperative/collaborative, creative and outdoor learning.

Curricular area covered: Literacy, numeracy, wellbeing and sciences.

Learners achieve (skills, knowledge, understanding and attitudes):

Third level - I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. [SCN 3-05b](#)

Fourth level - Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance. [SCN 4-05b](#)

Third level 3-05b

I can explain some of the processes which contribute to climate change and discuss the possible impact of atmospheric change on the survival of living things. SCN 3-05b

Learning intentions and success criteria

Learning intentions:

- Explain some of the causes of climate change and the processes involved.
- Give informed suggestions as to how changing climate will affect living things and their survival.
- Name three greenhouse gases and identify which human activities have increased their presence in the atmosphere and name two natural contributors to greenhouse gases.

Success criteria:

- I can explain some of the causes of climate change.
- I can explain the processes involved in climate change.
- I can give informed suggestions as to how a changing climate will affect living things and their survival.
- I can name three greenhouse gases.
- I can identify which human activities have increased the presence of greenhouse gases in the atmosphere.
- I can name two natural contributors to greenhouse gases.

Lesson plan

Countryside ranger led activities

1. Discuss some of the processes which contribute to climate change. Time: 10mins.
2. Over the last 400 years the country park area has been used for farming, bleaching, mining and has had mineral railways and kilns. This history shows the progression of industry in the area whilst the present day country park landscape highlights how nature can re-establish itself. The group will be shown historic maps and the remaining features associated with these activities as they tour the country park. Discuss how these activities have contributed to greenhouse gases. Time: 40mins.
3. Following this walk around the country park discuss whether there are natural contributors to greenhouse gases. Discuss natural producers of greenhouse gases and introduce the carbon cycle. Time: 10mins.

Suggested follow-up activities

1. Select one of the historic features from your country park visit (farming, bleaching, mining or kilns) and make up an A3 poster to be displayed within Dams to Darnley. Your poster should explain the historic activity, how it contributed to greenhouse gases and why areas such as the country park are important for the survival of living things today.
2. Deforestation debate. Ask groups of students to act out the roles of logger, conservationist, fast-food restaurant owner (use cleared land for rearing cattle), indigenous people, government and environmental manager.
3. Consider greenhouse gases. What can you do to lower your impact on climate change? What can your household do? What can your community do? What can the UK do? Divide the students into groups. Each group takes one topic suggested above and creates a leaflet for different audiences e.g. school newsletter, local paper or homes.
4. Other than greenhouse gases what else affects climate change? Can solar output, plate tectonics, volcanism and variations in the Earth's orbit cause climate change? What evidence is available for this? Prepare a Powerpoint presentation for other classes in your school and other groups in your community.

Third level 3-05b

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Discuss some of the processes which contribute to climate change with your group. For example the carbon cycle, greenhouse gases and the greenhouse effect. Time: 10mins.
2. Look at areas of current or past industrial land uses e.g. mining, railways, kilns/factories and quarries. Look at more natural land uses e.g. farmland, woodland, parkland and greenbelt. Discuss with your group whether activities associated with these land uses have contributed to climate change. Which industrial and more natural land uses and activities you explore with your group will depend on the areas you visit. Time: 40mins.
3. Discuss with your group natural contributors to greenhouse gases: water vapour through evaporation; carbon dioxide through volcanic eruptions and forest fires; methane from biological processes, for example in swamplands; the carbon cycle, including decomposition of organic material and nitrous oxide from microbial actions in wet tropical rain forests. Select a local plant or animal and discuss how climate change may affect its survival. Time: 15mins.

Equipment:

- Pictures of the local area and historic maps showing industry and farmland. For pictures of the country park area contact the countryside ranger service.
- Pictures of natural and anthropogenic contributors of greenhouse gases: carbon cycle, volcanoes, dust storms, forest fires, glaciers, coal burning, CFCs from aerosols and coolants, cement production, fertilisers and livestock.

Fourth level 4-05b

Through exploring the carbon cycle, I can describe the processes involved in maintaining the balance of gases in the air, considering causes and implications of changes in the balance. SCN 4-05b

Learning intentions and success criteria

Learning intentions:

- Explain the basics of the carbon cycle.
- Explain key terms in relation to the carbon cycle including photosynthesis, respiration, emissions, decomposition, diffusion and fossil fuel.
- Give three examples of human activities that release carbon dioxide.
- Make informed suggestions of how greenhouse gas production can be reduced.

Success criteria:

- I can explain the basics of the carbon cycle.
- I can explain key terms:
 - Photosynthesis
 - Respiration
 - Emissions
 - Decomposition
 - Diffusion
 - Fossil fuel
- I can give three examples of human activities that release carbon dioxide.
- I can make informed suggestions as to how we can reduce greenhouse gases.

Lesson plan

Countryside ranger led activities

1. Introduce the carbon cycle using pictures and check previous learning through questioning. Introduce key terms and check the group's understanding. Time: 15mins.
2. Do the carbon cycle quiz. This involves the students becoming carbon atoms and travelling through the cycle by going around the country park orienteering course and answering questions along the way. Time: 45mins.
3. Discuss greenhouse gases and how carbon dioxide contributes to the greenhouse effect. What human activities release carbon dioxide? How can we reduce greenhouse gases? Time: 15mins.

Suggested follow-up activities

1. Invent your own technology for transport that produces little or no greenhouse gases. Think about the implications of where your technology will be made and how parts for it will be transported for assembly. Do you think it is possible to create a technology that produces no greenhouse gases at any stage?
2. Think of ways that your school could reduce the amount of greenhouse gases it produces. Are there things you can implement? Make a five minute film to be played at the next school assembly.
3. Make a poster of greenhouse gases and their causes for display in your school.

Fourth level 4-05b

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Introduce the carbon cycle by using pictures and check your group's previous learning through questioning. Introduce key terms and check understanding. Time: 10mins.
2. Do the carbon cycle quiz. This involves your students becoming carbon atoms and travelling through the cycle by going around the country park orienteering course and answering questions along the way. Please contact the countryside ranger service for orienteering maps of the country park and the quiz. Time: 45mins.
3. Discuss greenhouse gases (water vapour, carbon dioxide, methane, nitrous oxide, CFCs and ozone) and how carbon dioxide contributes to the greenhouse effect with your group. What natural and human activities release carbon dioxide? How can we reduce anthropogenic greenhouse gases? Give the group scenarios that would alter the balance of the carbon cycle e.g. deforestation, forest fires, volcanic eruption, increased cattle farming or increased plantation forestry.

Equipment:

- Pictures of the carbon cycle.
- Orienteering map, quiz sheet, questions, answers, clip boards and pencils. These can be provided by the countryside ranger service.
- Pictures of the main human activities releasing carbon dioxide and a pie chart or graph showing the percentage of emissions from different sources.



Biological systems: Body systems and cells

SCN 0-12a, 1-12b

Reflection on prior learning should be done in school before a visit. Please inform the countryside rangers on prior learning before a visit using the school booking form (appendix 1).

Location: Dams to Darnley Country Park or school grounds if suitable.

Types of learner: All catered for (visual, auditory and tactile/kinaesthetic).

Types of approach: Active, cooperative/collaborative, creative and outdoor learning.

Curricular area covered: Literacy, numeracy, wellbeing and sciences.

Learners achieve (skills, knowledge, understanding and attitudes):

Early level - I can identify my senses and use them to explore the world around me. [SCN 0-12a](#)

First level - I have explored my senses and can discuss their reliability and limitations in responding to the environment. [SCN 1-12b](#)

Early level 0-12a

Early level - I can identify my senses and use them to explore the world around me. SCN 0-12a

Learning intentions and success criteria

Learning intentions:

- Name my five senses and name something that one can see, touch, hear, smell and taste around oneself.

Success criteria:

- I can name my five senses.
- I can name something I can see around me.
- I can name something I can touch around me.
- I can name something I can hear around me.
- I can name something I can smell around me.
- I can name something I can taste around me.

Lesson plan

Countryside ranger led activities

1. Play 'Listening Stones'. Walk into an area where there are various noises from different directions. Give each child a stone and provide a reason why theirs is special. The children have to close their eyes, hold the stones and listen for a minute. Then ask the children what they heard and to point in the direction that the sound came from. Time: 15mins.

2. Give each child or group of children an artist's pallet with several colours on it. As they walk around they have to pick things that match the colours. This can be adapted for different times of the year e.g. oranges and yellows in autumn. Alternatively, if they cannot pick something up ask the children to point to the matching colours instead e.g. the blue sky or yellow sunshine. Make sure to point out jaggy things to avoid and litter! Time: 15mins.

3. As part of a walk choose different plants along the way and ask the children to smell them. Ask what they smell like. If in season use wild garlic, mint, herb robert and meadow sweet. Time: 15mins.

4. Ask the children to find something rough and smooth; soft and hard; bright and dull. Give the children either a scavenger hunt sheet or just shout out one thing at a time and get them to come back with it. Talk about what they find and get them to feel what the rest of the group has found. Make sure to point out jaggy things to avoid and litter! Time: 15mins.

Suggested follow-up activities

1. When you get back to the classroom ask the children to say one word about their trip to the country park relating to each sense: I saw....., I heard....., I felt....., etc.

2. Collect natural items from your school grounds or locally and make a collage. Discuss with your group the different textures of items collected.

3. The children have to mimic the sounds of nature, either by copying you, remembering sounds from their trip or by listening if the activity is done in your school grounds.

Early level 0-12a

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).

Self-led activities

1. Play 'Listening Stones'. Walk into an area where there are various noises from different directions e.g. a river, cars, birds or wind in the trees. Have random stones you have collected earlier in a fancy bag. Tell the children that you bumped into a wizard in the woods just up the road from where you are and describe him (big beard, a velvet cloak, etc.) and tell them he gave you these magic listening stones. The wizard told you that if you hold them in your hand they will help you to hear well. Be enthusiastic. Give each child a stone and provide a reason why theirs is special e.g. it is smooth so it helps you hear birds, it is a triangle shape so you can hear leaves or it is rough so it helps you to hear water. The children have to close their eyes, hold the stones and listen for a minute. Then ask the children what they heard and to point in the direction the sound came from. Time: 15mins.

2. Give each child or group an artist's pallet with several colours on it. This can be made up by cutting a pallet shape from white card, sticking paint sample colours on it and then laminating it. As the children walk around they have to pick things that match the colours. Alternatively, if they cannot pick something up ask the children to point to the matching colours instead e.g. the blue sky or yellow sunshine. This can be adapted for different times of the year e.g. use more oranges, reds and yellows in autumn. Make sure to point out jaggy things to avoid and litter! Time: 15mins.

3. As part of a walk choose different plants along the way and ask the children to smell them. Ask what they smell like. If in season use wild garlic, mint, herb robert and meadow sweet. Time: 15mins.

4. Ask the children to find something rough and smooth; soft and hard; bright and dull. Give the children either a scavenger hunt sheet or just shout out one thing at a time and get them to come back with it. Talk about what they find and get them to feel what the rest of the group has found. Make sure to point out jaggy things to avoid and litter! Time: 15mins.

Equipment:

- Stones and a bag.
- Artist's pallets (home-made or borrowed from the countryside ranger service).
- Scavenger hunt sheets and collection bags.

First level 1-12b

First level - I have explored my senses and can discuss their reliability and limitations in responding to the environment. SCN 1-12b

Learning intentions and success criteria

Learning intentions:

- Explore one's senses and discuss their reliability and limitations in responding to the environment.

Success criteria:

- I can give two examples of when I may not be able to use certain senses.
- I understand that different individuals may sense things differently.

Lesson plan

Countryside ranger led activities

1. Play 'Listening Stones'. Walk into an area where there are various noises from different directions. Give each child a stone and provide a reason why theirs is special. The children have to close their eyes, hold the stones and listen for a minute. Then ask the children what they heard and to point in the direction that the sound came from. Time: 15mins.
2. Take the children to an area with lots of differently shaped trees and play 'Meet a Tree'. This involves being blindfolded, hugging a tree and then having to find your tree once the blindfold is removed. Time: 20mins.
3. Make up feely boxes containing differently textured items e.g. pine cones, feathers, moss, ferns, mud and stones. The children have to feel inside the box and describe what they feel, but not name the object. Time: 15mins.
4. Put differently smelling natural items e.g. mud, garlic, herbs or flowers in pierced cups. Divide the children into groups, blindfolding one child in each. Ask the blindfolded child to smell what is in the cup and describe it to the rest of their group. Give everyone in the group a shot at being blindfolded and describing. Time: 15mins.
5. Call out the five senses one at a time and get everyone to point at the part of their body that they use for that sense. When might we not be able to use certain senses? Can we always trust our senses? Time: 10mins.

Suggested follow-up activities

1. Look at some optical illusions. Discuss what the children are seeing and the reality.
www.illusions.org/
2. Discuss with your group what special senses animals have developed to help them. For example an owl has great eyesight for catching prey in the dark, a bat uses echolocation to catch insects at night and a mole has feelers on the tip of its nose to find insects.

First level 1-12b

Self-led information

The following information is for groups who intend to undertake activities without a countryside ranger present, either within the country park, school grounds (if suitable) or a local green space. Each activity has a general description together with an equipment list. The majority of the activities are duplicates of the countryside ranger led ones described earlier but more detail is provided on subjects and games. There are notes for teachers leading their own outdoor learning activities outwith school grounds in appendix 2 and an example risk assessment can be found in appendix 3. It is important to remember there will be additional hazards related to specific sites, groups and variables which will not be included in the example risk assessment. Make sure you carry out a full risk assessment before your trip. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessments can be sought from the Dams to Darnley countryside ranger service even if they are not going to be leading the group. If you do not have the required equipment it may be possible to borrow this from the countryside ranger service (contact details can be found in appendix 4).



First level 1-12b

Self-led activities

1. Play 'Listening Stones'. Walk into an area where there are various noises from different directions e.g. a river, cars, birds or wind in the trees. Have random stones that you have collected in a fancy bag. Tell the children that you bumped into a wizard in the woods just up the road from where you are and describe him (big beard, and a velvet cloak) and tell them he gave you these magic listening stones. The wizard told you that if you hold them in your hand they will help you to hear well. Be enthusiastic. Give each child a stone and provide a reason why theirs is special e.g. it is smooth so it helps you hear birds, it is a triangle shape so you can hear leaves or it is rough so it helps you to hear water. The children have to close their eyes, hold the stones and listen for a minute. Then ask the children what they heard and to point in the direction that the sound came from. Time: 15mins.

2. Play 'Meet a Tree'. Take the children to an area with lots of differently shaped trees and divide them into pairs or small groups. Give each pair or group a blindfold and tell them that they are going to be doing some tree hugging. Set clear boundaries and avoid jaggy trees and those with low branches. One person in the pair or group gets blindfolded, spun around and then led carefully by the other member/s to a tree. They are told to hug the tree and feel for what makes their tree special e.g. certain lumps, grooves, ridges, branches or moss. They are then led back to the centre, spun again and have their blindfold removed. They have to then try to identify the tree that they were hugging. Everyone in the group has a shot. Do a demonstration. Make sure they are leading each other sensibly. Time: 20mins.

3. Make up feely boxes (a box you cannot see through, you have to put your hand in a hole and feel what is inside) containing differently textured items e.g. pine cones, feathers, moss, ferns, mud or stones. The children have to feel inside the box and describe what they feel, but not name the object. Time: 15mins.

4. Put differently smelling natural items e.g. mud, garlic, herbs or flowers in pierced cups. Divide the children into groups, blindfolding one child in each. Ask the blindfolded child to smell what is in the cup and describe it to the rest of their group. Give everyone in the group a shot at being blindfolded and describing. Time: 10mins.

5. Call out the five senses one at a time and get everyone to point at the part of their body that they use for that sense. When might we not be able to use certain senses? For example at night when we cannot see clearly or if we have a cold and are not able to smell well. Can we always trust our senses? Time: 10mins.

Equipment:

- Stones and a bag.
- Blindfolds.
- Feely boxes.
- Perforated cups to put smelly objects in.

Appendix 1 Booking form for schools

Contact details	
Contact name	Date submitted
School	
Postal address	
Post code	Phone
E-mail	
Class details	
Number of pupils	
Group leader (if different from contact name)	Number of adults (excluding countryside ranger)
Class year/age group/ learning level	
Special requirements	
Theme or subject of study and previous classroom knowledge	
Visit details	
Please provide three desired options – we will strive to meet your first date, but cannot guarantee this.	
Suggested date and time (am or pm)	
Suggested date and time (am or pm)	
Suggested date and time (am or pm)	
Country park or your school	
Preferred activities & experiences & outcomes codes	
Further information	
The countryside ranger service compiles a risk assessment for each country park based activity which they lead, a copy of which is available on request.	
<p>Please return to: Dams to Darnley Country Park, Countryside Ranger Service, Environment Department, Thornliebank Depot, 190 Carnwadric Road, Thornliebank, East Renfrewshire G46 8HR. Phone: 0141 577 4053/4054 Fax: 0141 577 3682 Email: d2d@eastrenfrewshire.gov.uk</p>	

Appendix 1 Evaluation form for schools

In the interests of improving the service offered to schools by the countryside ranger service please take a few minutes to complete this form. Feel free to be completely honest; we value your observations and suggestions.

Name of school and class					Date of visit	
Name of countryside ranger/s						
Topics being covered in school						
Topics covered during visit						
List any specific Curriculum for Excellence topics covered during visit						
How would you rate the coverage of these topics during your visit?	Very good	Good	Average	Poor	Very poor	
Things that worked well						
Areas we could improve						
How would you rate the activities undertaken during your visit?	Very good	Good	Average	Poor	Very poor	
Things that worked well						
Areas we could improve						
How would you rate the worksheets/ materials used during your visit?	Very good	Good	Average	Poor	Very poor	
Things that worked well						
Areas we could improve						

Appendix 1 Evaluation form for schools

How would you rate our pre-visit communications and arrangements?	Very good	Good	Average	Poor	Very poor
Things that worked well					
Areas we could improve					
How well did the countryside rangers relate to children?	Very well	Well	Average	Poorly	Very poorly
Things that worked well					
Areas we could improve					
How was the level of study?	Too basic	About right	Too advanced		
Things that worked well					
Areas we could improve					
Any other comments, advice or suggestions					
How did you find out about the countryside ranger service?					
<p>Please return to: Dams to Darnley Country Park, Countryside Ranger Service, Environment Department, Thornliebank Depot, 190 Carnwadric Road, Thornliebank, East Renfrewshire G46 8HR. Phone: 0141 577 4053/4054 Fax: 0141 577 3682 Email: d2d@eastrenfrewshire.gov.uk</p>					

Appendix 2

Notes for teachers leading their own outdoor learning activities outwith school grounds

Selecting a location

Visit potential locations within the country park or your local area. Check the appropriateness of sites in terms of: suitability for lesson, distance, ground conditions, health and safety issues, parking (if taking a coach), litter and other users. You can get advice from the countryside ranger service about the best sites within the country park to use. Their contact details can be found in appendix 4. Outwith the country park you can talk to local people, community groups and businesses to get tips on potential locations.

Plan your route and teaching locations within the site. Have alternative options in case the conditions you find are different from your previous visit. The more you familiarise yourself with an area, the more confident you will be about taking your group there.

Risk assessments

A full risk assessment, including emergency procedures, should always be completed before your trip. An example risk assessment for outdoor learning is included in appendix 3. This example is a general risk assessment and can form the basis of your own. There will be additional potential hazards related to specific transport arrangements, sites, groups and variables which are not included in the example and must be included in yours. Blank risk assessment forms can be downloaded from www.damstodarnley.org/pack. Additional advice on risk assessment can also be sought from the countryside ranger service even if they are not going to be leading your group. Remember to inform other leaders and the group of emergency procedures.

Weather

Check the weather conditions on the lead-up to a visit and do not rely on one source. This does not mean just looking out for rain, ice, snow or wind. Sunshine can be hazardous too. Make sure your group are prepared. If the weather is extreme or ground conditions are too dangerous your trip may need to be cancelled. Always have an alternative plan.

Clothing

Give parents/guardians and children plenty of warning (and reminders) before an outdoor visit. If some children are unlikely to have suitable clothing at home ask the school if they will provide wellies and waterproofs. A change of clothes in case your group gets very wet is a good idea. In cases of sunshine make sure children are covered up; sun hats are extremely beneficial. Sun lotion is useful if required, but remember to check for any allergies as part of your trip planning.

Appendix 2

Equipment

Leaders should have the necessary equipment required for all planned activities. Additionally you should have a:

- Mobile phone with emergency numbers saved on it. Staff in school should have this mobile number. All leaders and helpers should have each other's numbers also.
- First aider with first aid kit suitable for the size of the group and its needs. This should include required medication for any participants. Children should carry their own medication in some cases e.g. inhalers.
- Register of participants and any relevant medical conditions and allergies.

Food

Participants should carry their own food and water. Make sure everyone has enough food and water for the length of the activity. Behaviour and therefore learning can decline when children are hungry and/or thirsty. Take additional snacks. Check for any allergies before giving children food. If it is cold a flask containing a warm cordial can help heat everyone up.

Toilets and hygiene

If toilets are available then plan stops into your trip. If there are no facilities follow the Scottish Outdoor Access Code's 'leave no trace approach'. Do not forget child protection procedures and privacy for pupils. With young children it is also advisable to carry a change of clothes in case of 'accidents'.

Health Protection Scotland advises children wash their hands with soap and running water before eating. You can carry a bottle of water for hand washing and some soap. Where there is no visual contamination gels and sanitisers are effective.

Transport

Try to select a site that can be walked to. This not only connects children with their local area but also has health benefits and saves money. When walking next to roads follow the Highway Code for pedestrians. High visibility vests can also be worn, especially in dark or foggy conditions. Be realistic about walking times and distances. You want the group to enjoy themselves and this may involve a degree of exploring and resting enroute.

If you are taking a coach make sure there is parking available. Some country roads are narrow and coaches may have difficulty accessing them or turning. Seek advice on this from the coach company and driver.

Appendix 2

Management and behaviour

Outline the behaviour expected from your group when outside the school at the outset. Highlight the potential hazards that have been identified through the risk assessment and reinforce these when they arise. Highlight emergency procedures to your group and identify a meeting point if anyone gets separated. If a group member does not know how to get back to the meeting point they should stay still, attract attention to themselves and wait until they are found. Everyone should be informed how to stay warm if they become isolated from the group.

Working with other leaders

Make sure that all leaders understand the planned activities and experiences and outcomes. Brief all leaders on their roles and responsibilities, together with emergency procedures, hazards and any children or young person with additional support needs and behavioural and/or medical conditions.

Scottish Outdoor Access Code

Everyone has access rights established by the Land Reform (Scotland) Act 2003. You can exercise these rights, provided you do so responsibly, over most land and inland water in Scotland. You can exercise these rights for recreational and educational purposes. The Land Reform Act also requires land managers to recognise access rights and to manage their land and water responsibly in relation to these rights. The Scottish Outdoor Access Code provides more detailed guidance on the responsibilities of those exercising access rights and of those managing land and water. There is a link to the code in appendix 4.

It is important that children understand the basics of the access code as well. The code is based on three key principles:

- Respect the interests of other people.
- Care for your environment.
- Take personal responsibility for your own actions.

Responsible access is particularly important within the country park as much of it remains as working farmland in private ownership, so everyone visiting it has an important duty to act responsibly.

Appendix 3 Risk assessment form

A copy of this assessment must be kept at the place of work to which it refers and the risk factor and control measures brought to the attention of all personnel carrying out and/or supervising the activities.

Ref no.	Activity 1		
Date of assessment	17 September 201X		
Department	Environment	Service	Countryside rangers
Location	Dams to Darnley Country Park		
Activity date	Tuesday 24th September 201X		
Activity/task	Day events/field trips/activities		
Activity description	Here outline the group, location, topic and activities. For example: Dams to Darnley Primary, Darnley Mill, living and non-living things, activities to include walk, games and discussions.		
Person(s) who could be affected	Countryside rangers/staff/pupils and members of the public.		
Name of assessor	Elizabeth Morrison		
Signature of assessor			
Designation	Countryside ranger		
Name of responsible manager	J McManager		
Signature of manager			
Designation	Manager		
Date	18 September 201X		
Assessment review date	For next event		

Appendix 3 Risk assessment form

Hazard present		Control measures	Controls in place	
Yes	No		Yes	No
		1. Pre-planning		
✓		Leader in charge and group leaders for the activity have been appointed.	✓	
✓		Leader in charge/group leader has made an exploratory visit to location.	✓	
✓		Disclosure (Scotland) checks have been carried out/PVG.	✓	
✓		Site is assessed and hazardous areas/items identified and removed or avoided.	✓	
✓		Ongoing risk assessments and reassessments will be carried out during the event by leader in charge/group leader.	✓	
		2. Supervision		
✓		Participants will be supervised during countryside ranger led activities.	✓	
✓		Group leaders have full instructions on their responsibilities.	✓	
✓		Teachers will be responsible for discipline.	✓	
✓		A safety briefing will be given where necessary prior to the activity commencing.	✓	
✓		Emergency procedures will be drawn up before the event commences.	✓	
		3. Traffic/vehicles		
✓		Participants will be supervised by a countryside ranger and/or teacher at all times when crossing roads.	✓	
	✓	All vehicles will be roadworthy and in good condition.		
	✓	Vehicles will not be overloaded.		
		4. Slips/trips		
✓		Area to be visited will be checked prior to visit for hazards which could cause slips, trips or falls.	✓	
✓		Locations where falls could occur will be avoided.	✓	
✓		These hazards will be pointed out at the beginning of the session and when they arise.	✓	
✓		The group will be advised to wear suitable footwear. Sturdy shoes with a good grip.	✓	
		5. Noise		
	✓	Areas of high noise levels will be avoided.		
	✓	Ear defenders will be supplied if high noise levels are liable to be experienced.		
	✓	Instruction will be given to all persons who will use ear defenders.		
		6. Climatic conditions		
✓		Leader in charge and group leaders will be competent to carry out instruction and be aware of hazards liable to be encountered.	✓	
✓		Arrangements have been considered where changes in weather conditions make it necessary to alter/cancel the planned activity.	✓	

Appendix 3 Risk assessment form

Hazard present		Control measures	Controls in place	
Yes	No		Yes	No
		7. Walking activities		
✓		Leader in charge and group leaders will be competent to carry out instruction and be aware of hazards liable to be encountered.	✓	
✓		Local knowledge of conditions is available.	✓	
✓		Participants will be instructed in hazards and safety procedures.	✓	
		8. Emergency procedures		
✓		Nearest hospitals, contact numbers & locations will be sought prior to the trip.	✓	
✓		Contact will be maintained with a third party in relation to where persons are at all times and a procedure will be put in place should contact be lost. (East Renfrewshire lone working system)	✓	
✓		Leader in charge and group leaders will be appointed as emergency contacts.	✓	
✓		Public liability insurance is in place.	✓	
✓		Arrangements in place for first aid.	✓	
		9. Other		
✓		Information on medical conditions which may be affected by activity requested before commencement.	✓	
✓		Countryside rangers are trained first aiders.	✓	
✓		Rules for behaviour discussed at the commencement of activity where necessary.	✓	
✓		The group will be advised not to touch their face or eyes with their hands during activities and to wash their hands following activity especially before eating.	✓	

Action plan for risk assessment			
Ref no.	Action required	Action (by whom and when)	Completed
	Behaviour expected and hazards pointed out.	At the beginning of the activity and ongoing. Countryside ranger EM.	
	Group told not to touch face and eyes during activity and to wash hands	At beginning and end of the activity. Countryside ranger EM.	

Emergency contacts: NHS helpline 08454 24 24 24

Hospital: Victoria Infirmary
0141 201 6000
Langside Road, Glasgow G42 9TY

Action parties to be named in full:

Signature of manager:

Date: 18 September 201X

Appendix 3 Blank risk assessment

A copy of this assessment must be kept at the place of work to which it refers and the risk factor and control measures brought to the attention of all personnel carrying out and/or supervising the activity.			
Ref no.			
Date of assessment			
Department		Service	
Location			
Activity date			
Activity/task			
Activity description			
Person(s) who could be affected			
Name of assessor			
Signature of assessor			
Designation			
Name of responsible manager			
Signature of manager			
Designation			
Date			
Assessment review date			

Appendix 3 Blank risk assessment

Hazard present		Control measures	Controls in place	
Yes	No		Yes	No
		1. Pre-planning		
		Leader in charge and group leaders for the activity have been appointed.		
		Leader in charge/group leader has made an exploratory visit to location.		
		Disclosure (Scotland) checks have been carried out/PVG.		
		Site is assessed and hazardous areas/items identified and removed or avoided.		
		Ongoing risk assessments and reassessments will be carried out during the event by leader in charge/group leader.		
		2. Supervision		
		Participants will be supervised during countryside ranger led activities.		
		Group leaders have full instructions on their responsibilities.		
		Teachers will be responsible for discipline.		
		A safety briefing will be given where necessary prior to the activity commencing.		
		Emergency procedures will be drawn up before the event commences.		
		3. Traffic/vehicles		
		Participants will be supervised by a countryside ranger and/or teacher at all times when crossing roads.		
		All vehicles will be roadworthy and in good condition.		
		Vehicles will not be overloaded.		
		4. Slips/trips		
		Area to be visited will be checked prior to visit for hazards which could cause slips, trips or falls.		
		Locations where falls could occur will be avoided.		
		These hazards will be pointed out at the beginning of the session and when they arise.		
		The group will be advised to wear suitable footwear. Sturdy shoes with a good grip.		
		5. Noise		
		Areas of high noise levels will be avoided.		
		Ear defenders will be supplied if high noise levels are liable to be experienced.		
		Instruction will be given to all persons who will use ear defenders.		
		6. Climatic conditions		
		Leader in charge and group leaders will be competent to carry out instruction and be aware of hazards liable to be encountered.		
		Arrangements have been considered where changes in weather conditions make it necessary to alter/cancel the planned activity.		

Appendix 3 Blank risk assessment

Hazard present		Control measures	Controls in place	
Yes	No		Yes	No
		7. Walking activities		
		Leader in charge and group leaders will be competent to carry out instruction and be aware of hazards liable to be encountered.		
		Local knowledge of conditions is available.		
		Participants will be instructed in hazards and safety procedures.		
		8. Emergency procedures		
		Nearest hospitals, contact numbers & locations will be sought prior to the trip.		
		Contact will be maintained with a third party in relation to where persons are at all times and a procedure will be put in place should contact be lost. (East Renfrewshire lone working system)		
		Leader in charge and group leaders will be appointed as emergency contacts.		
		Public liability insurance is in place.		
		Arrangements in place for first aid.		
		9. Other		
		Information on medical conditions which may be affected by activity requested before commencement.		
		Countryside rangers are trained first aiders.		
		Rules for behaviour discussed at the commencement of activity where necessary.		
		The group will be advised not to touch their face or eyes with their hands during activities and to wash their hands following activity especially before eating.		

Action plan for risk assessment			
Ref no.	Action required	Action (by whom and when)	Completed

Emergency contacts: NHS helpline 08454 24 24 24

Hospital: Victoria Infirmary
0141 201 6000
Langside Road, Glasgow G42 9TY

Action parties to be named in full:

Signature of manager:

Date:

Appendix 4

Dams to Darnley Country Park Countryside Ranger Service

Environment Department
Thornliebank Depot
190 Carnwadric Road
Thornliebank
East Renfrewshire G46 8HR

Tel: 0141 577 4053/4054
Fax: 0141 577 3682
Email: d2d@eastrenfrewshire.gov.uk
Web: www.damstodarnley.org.uk

Scottish Outdoor Access Code

www.outdooraccess-scotland.com/

Activity ideas

www.naturedetectives.org.uk/
www.rspb.org.uk/youth/
www.buglife.org.uk/activities-for-you/children-and-schools
www.bumblebeeconservation.org/get-involved/bumble-kids/activities/

Outdoor games

www.ehow.com/list_6385593_environmental-outdoor-games-play-children.html
www.livestrong.com/article/172572-environmental-outdoor-games-to-play-with-children/
www.wilderdom.com/games/EnvironmentalActivities.html
www.tes.co.uk/teaching-resource/Primary-Environmental-Games-6028446/

Online games

www.earthpeace.com/Games.htm
www.makeuseof.com/tag/10-environmental-games-teach-kids-earth-ecology-conservation/

General information for outdoor learning

www.educationscotland.gov.uk/learningteachingandassessment/approaches/outdoorlearning/index.asp