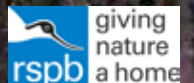


Teachers Pack



Approach page

Hello, and welcome to the Inner Forth's teacher's resource pack!

This pack aims to create fun and positive experiences for your students whilst they are learning about the wildlife and heritage of their local area through activities and artwork, storytelling and songs, games, writing and discussions.

As a result of feedback from local teachers the pack has been designed to

Be accessible

The lesson plans and instructions are quick and easy for you to understand and help you to prepare lessons. The majority of resources are provided in the accompanying box or, for materials that cannot be re-used and put back in the box, are easily sourced for example recycled objects or household/kitchen items.

Be linked to the Curriculum of Excellence

Each lesson is linked to CofE Experiences & Outcomes, is interdisciplinary and aims to develop the four capacities of your students as successful learners, confident individuals, responsible citizens and effective contributors.

Develop your confidence of teaching outdoors

There are risk assessments provided for field trips, basic tips for teaching outside (before, during and after) and simple seasonal tricks that you can do with your class, all with the aim of making going outside that little bit less daunting.

Be both detailed and flexible

This resource pack can be used as a loose framework for general game and activity ideas, or followed closely for full lessons. Each lesson can be used in isolation from the rest, or the whole pack of 18 lessons can be used to form a term-long and in-depth project topic.



If you are time pressured I recommend looking at

Mapping section: Lesson 2 Exploring Inner Forth's Treasures (p7)

Wildlife section: Migration: Imagination and direction Lesson 8 (p19)

Heritage section: Lesson 10 Discovering Life on the Inner Forth (p23)

Problems and solution section: Lesson 13 Sources of and solutions to pollution. (p30)

And finally environmental games at the end (p45).

The Lost Words book by Robert MacFarlane and Jackie Morris is a beautiful book about natural words and you can find linked activities on the John Muir Trust website at: www.johnmuirtrust.org/initiatives/the-lost-words

In today's society, children are spending more time indoors than people who are in jails. Learning about the rich wildlife and heritage of our beautiful natural world is an exciting way to entice us to explore more outdoors. Here, our mental and physical health can improve, children's imaginations can grow, and we can be inspired.

We need to reignite a love and care for nature in our children if we are to protect and conserve our bonnie local area for our children's children to enjoy.

Thank you for your work as a teacher in inspiring our next generation.

For any further queries about the resource pack, please contact:
InnerForthReserves@rspb.org.uk

All of these resources (worksheets, lesson plans, risk assessments and the like) are available on our website at: www.innerforthlandscape.co.uk/

This education pack developed and created by RSPB Scotland staff as part of the Inner Forth Landscape Initiative. The Inner Forth Landscape Initiative was funded from 2014-18 by the National Lottery through the Heritage Lottery Fund.



Contents

Mapping the Inner Forth Area

- A sense of place (Page 5)
- Exploring the Inner Forth's Treasures (Page 7)
- Forming the Inner Forth (Page 9)

Wildlife

- Habitats at home (Page 11)
- Bird songs (Page 13)
- Bird beaks (Page 15)
- Nesting: Making and protecting home! (Page 17)
- Migration: Imagination and direction. (Page 19)
- Food chain/webs (Page 21)

Human-life

- Discovering Life on the Inner Forth (Page 23)
- Human-Life in the past (Page 25)

Problems

- Climate change & flooding (Page 27)
- Sources of and solutions to pollution (Page 30)
- People and land (Page 32)

Solutions

- Creating a revolution of solution (Page 34)

Field Trips information

- Basic outdoor tips and seasonal tricks (Page 36)
 - Environmental & Cooperative Games (Page 45)
 - Index (separate lessons into CofE Es & Os) (Page 54)
-

A sense of place



Learning Outcomes

Improved awareness of local area and map skills.



Preparation time:

- 10 min reading material
- 10 min printing

Delivery:

Varied – see activity list

Resources needed from resource box:

- Compasses (x30)
- Arrows for sticking to maps of different scales.

On CD:

- Lesson 1 Mapping Worksheet, Maps (Q1 & Q2 Map), Lesson 1 powerpoint

Resources needed by teacher:

2nd

- Paper, clipboard and pencils for drawing maps
- Print Inner Forth map (from CD) for student to use in pairs.



Home learning activity

Before class

Do you like looking at maps, atlas' or globes? Show and tell about your favourite maps.

After class

Draw a map of your favourite place or somewhere else such as bedroom, home, street or swimming pool. Add labels, scale and N arrow.

Linked eco-schools activity:

Litter pick in school grounds/area you make a map of at home.

Turn over for activity list

Activity

CofE Es & Os

Put the magnetic map up in the class to have as reference.

All From global to local: (20 minutes)

as a class locate school and other arrows on

- world maps (use google maps),
- UK map, Inner Forth area map and local area map

Pay close attention to where and how the different scale bars are expressed

What are scale bars?

Scale bars are the relationship between distance measured on the maps and real distance between two points.

SOC 1-14a

2nd Why do we use scale bars? (20 minutes)

To help us work out the distance on maps of different sizes.

In pairs, on Inner Forth map students pick two points on the map (e.g. your school and Black Devon RSPB reserve).

Calculate the distance using a compass, pencil, ruler and scale bar

MTH 2-17d

2nd How has the physical environment shaped the way in which the land is used?

Compare physical maps (elevation, forests, farmland), route map (roads and towns).

1. *Imagine you are an explorer and you've just arrived to new land. What would you look for? Think about things you need to survive like food, shelter, warmth, accessibility. Where would you get these things? Think about what sort of land would best suit (see powerpoint, and show slides either before or after this exercise depending on student's ability). Discuss as a group what your new home would look like and draw a picture/poster between you. Share with class why it looks like this, and what features what help you get the things you need to survive. (35 minutes)*

SOC 2-13a

2. What does the physical environment around your school look like? Why did we build here? As a group again, look at maps with contour lines: flat areas used for agriculture and urban settlements, steep areas not used or used for sheep grazing. (20 minutes)

SOC 2-13a

3. *Map symbols*

Complete worksheet 1 to compare and contrast how the area around these features look on physical feature maps and human feature maps. (30 minutes)

SOC 2-14a

All Practical activity

Student's go outside and draw map of their school grounds – identifying important land features, add directions using a 180° protractor and a scale bar using a ruler. Level of complexity of map depending on age e.g. contour lines for second level. (20 minutes)

EXA 1-04a
MTH 1-21a/
EXA 2-04a
MTH 2-21a

Follow up mapping activity:

Lesson 2 Lesson 8 Lesson 14

Exploring the Inner Forth's Treasures



Learning Outcomes

Improving mapping skills, investigating Inner Forth facts and having fun.



Preparation time:

15 minutes to read over material particularly poem worksheet

Delivery:

1-1 ½ hours

Resources needed from resource box:

- Magnetic map of the Inner Forth
- Magnets (11)

On CD:

- Lesson 2 Treasure hunt poem worksheet and answers. Inner Forth treasure hunt map.

Resources needed by teacher:

- Add grid reference, scale bar and North arrow to a map of the playground (you could draw one or use one drawn by a student from the previous session)
- Before class, hide magnets around the school playground, marking down grid references of hidden treasure. (First - simple GR e.g. B3 Second – 4-6 figure GR e.g. 2748, 284950)



Home learning activity

After class

Set task to do a treasure hunt by making a map and grid reference at home perhaps in your room or a local park. Hide little treasures for yourself or family/friends. Share about your adventure with the rest of the class.

Linked eco-schools activity:

Litter pick in school grounds/area you make a map of at home.

Turn over for activity list

Activity

CofE Es & Os

Recap

Recap previous class by looking at playground maps. *Have you thought about your sense of place since doing these maps? Is there anything you would add to your map that's changed since you drew it?*

SOC 1-14a

Treasure hunt

In the classroom

- Set the scene... *'Imagine you are brave explorers, adventuring through unknown land for the first time. We are a clan that need to find out what these lands hold for us! To do that more quickly we will split into groups and complete the challenge...'*
- Divide class by the number of magnets (11).
- Complete appropriate worksheet
- Grid reference given to each group once worksheet is complete. Encourage students to help out other 'clans' that haven't complete their worksheets yet, until everyone's ready to explore!

LIT 2-14a
LIT 1-14a

Outside

- Ask students to close their eyes and assume character of their favourite explorer e.g. https://www.youtube.com/watch?v=Wc_kQsNzu7M or relate to years topic such as the Vikings.
 - Students locate treasure in the playground. Allow space for free play/being explorers. What might newly arrived explorers look for?
- 2nd** extension: Pick two points in the playground and count how many footsteps apart the points are? Locate these points on the map. What distance in cm are these grid references on your map?

EXA 1-12a
EXA 2-12a
EXA 1-04a
EXA 2-04a
MTH 1-18a
MTH 2-18a
MTH 2-17d

Back inside

- Come back into class and pass around magnets in a circle, discussing what the magnets show, linking facts about Inner Forth area.
- Talk about how it felt to be an explorer, what you enjoyed, found challenging or your favourite fact of today.
- Looking at Inner Forth Map PDF, student's stick magnets to map.

Well done wilderness explorers! This was a challenging task that deserves a wild badge! Make explorer badges like in 'UP' for you to wear on your next adventure!

LIT 1-02a
LIT 2-02a



This class easily leads onto Lesson 10 – Discovering life on the Inner Forth.

Forming the Inner Forth



Learning Outcomes

Learning and understanding how Inner Forth was formed.



Preparation time:

15 minutes to read storymat instructions

Delivery:

1-1 ½ hours

Resources needed from resource box:

- Grey/black/white camouflage sheet
- Green/brown camouflage net
- White sheet and blue sheet
- Bag of white fluffy balls
- Picture of earth showing inner layers
- Inflatable globe
- 'Inner Forth; formed by nature, shaped by people' DVD

On CD:

- Lesson 3 storymat instructions, recording, creative writing story mountain worksheet.

Resources needed by teacher:

- Cardboard box
- White stones (if students cannot bring them in – see Before class)

Home learning activity

Before class

If students can, collect a white pebble of any size and bring into class.

After class

There are still living trees that sprouted just after the last ice age, 9,000 years ago!!! Do you know how to tell how old a tree is? Can you go out and find the oldest tree in your area? Ask it how old it is!

Linked eco-schools activity:

It's not the end of the Ice Age but we still need lots of new trees! Plant a tree in your school. Ask Woodland Trust for some saplings! <https://www.woodlandtrust.org.uk/get-involved/schools/trees-for-schools/>

Turn over for activity list

Activity

CofE Es & Os

Students sort white stones into 'small' and 'large' groups.

Formation story

As a class we explore the formation of the Inner Forth using storymat resources. (see storymat instructions on the CD)

- Watch beginning of 'Inner Forth; formed by nature, shaped by people' DVD
- Watch some of the BBC short videos about glaciers and how they move and shape the land. http://www.bbc.co.uk/science/earth/water_and_ice/glacier
- Watch this short film of how life has changed over time in the Ochil Hills which form on side of the Forth Valley <http://www.ochils.org.uk/ochils-and-locals>

SOC 1-07a
SOC 2-07a

Imagination meditation

- Students lie on the floor with their eyes closed and play Recording 1. This is a meditation style recording where the students imagine they are the re-emerging land.

HWB 1-01a
HWB 2-01a
HWB 1-08a
HWB 2-08a

Creative writing piece worksheet

- Prompt: "I opened my eyes for the first time in thousands of years and..."
Imagine you are one of the first trees to grow back on land!
How do you feel? Lonely? Excited? Scared? Confused?! What do you see, smell, and hear? What happened next? Use your story mountain to help you.

LIT 1-07a
LIT 2-07a
LIT 1-23a
LIT 2-23a
ENG 1-30a
ENG 2-30a

This class can lead into either Lesson 4 or lesson 10.

Habitats at home



Learning Outcomes

Students learn about local habitats and what animals are present in each place.



Preparation time:

1st (20 minutes) to source recycled materials

Delivery:

1-1 ½ hours

Resources needed from resource box:

- Animal pairs cards (x4)
- Habitat magnets

On CD:

- Lesson 4 powerpoint and Habitat activity instruction list.

Resources needed by teacher:

- 1st** Recycling materials (ask students to bring in) and other habitat making materials (see activity sheet).

Home learning activity

Before class

If students can, collect a white pebble of any size and bring into class.

After class

Try and get out to some of these habitats to see the animals you learnt

about! Take some Wild Challenges with you and draw a picture/poster of your experience including some fun facts of the area. <https://www.rspb.org.uk/fun-and-learning/for-families/family-wild-challenge/activities/>

Linked eco-schools activity:

Make a new habitat to increase your schools biodiversity! Try a bug hotel <https://www.rspb.org.uk/globalassets/downloads/kids--schools/teaching-resources/make-a-bug-hotel.pdf> or simply spreading some wildflower seeds for a butterfly garden <https://www.rspb.org.uk/globalassets/downloads/kids--schools/teaching-resources/make-a-butterfly-garden.pdf>

Turn over for activity list

Activity

CofE Es & Os

Introduction (30 minutes)

A habitat is an animal's home. There are a vast variety of habitats around the Inner Forth Area. What different habitats can you think of?

- Using power point, discuss each habitat. Pose the questions; Has anyone been to these places before? What plants and animals might you see there? Why are they there? Animals look for food, shelter, water and space to survive. They have different requirements of each, so different habitats suit different animals better.

After each habitat is introduced, one student adds habitat magnet to map.

SCN 1-01a
SCN 2-01a

Animal pair game (moving around activity).

Let's get to know the animals in the Inner Forth a bit better. See games section.

2nd Graphical representation of animals.

Students pick a suitable graphic representation (bar chart) to create a visual representation the diversity of animals in each habitat (how many different animals were present). This could led to investigation about why there's a lower diversity in urban/industrial areas (less wild homes in built up urban areas) and what we can do about it (make animal homes, less development on wild spaces).

Habitat activity (1 hour)

1st Recreate habitats through sensory boxes. See activity sheet.

2nd Pick your favourite habitat and write a letter to a friend about a real or imaginary experience there. Who were you with or were you alone? What did you see, touch, and smell? How did you feel? Did it feel like home? Why or why not? Draw a picture of it.

All Invite students to walk from one end of the class to the other, one by one, acting out how they did or would walk through the habitat. What shoes would you wear if any? Was it difficult to walk through it? Did you sit for a while or walk quickly? Were you quiet and relaxed or excited and active?

The lesson can lead onto Lesson 6 (bird beaks) or Lesson 9 (food chains).

SCN 0-15a

LIT 2-20a
SOC 2-14a

EXA 1-01a /
EXA 2-01a
EXA 1-09a /
EXA 2-09a
EXA 1-14a /
EXA 2-14a

Bird songs



Learning Outcomes

Learning about the diversity of bird song through our own song.



Preparation time:

10 minutes to read over power point

Delivery:

Optional activities – see list for breakdown

Resources needed from resource box:

- Animal pair cards (birds only)

On CD:

- Lesson 5 power point

Resources needed by teacher:

- To sort the animal pair cards by selecting only birds.
- Elastic bands for students (in pairs)
- Oranges – one per student (for cooperative pelicans game)
- **2nd** Musical instruments



Home learning activity

Before or after class

See if you can listen to any birds singing in the trees. Can you repeat their call back to them, and share it with the class?

Linked eco-schools activity:

There would be more song birds in your school or local area if there was more food for them! Why not try out a homemade bird cake! <https://www.rspb.org.uk/fun-and-learning/for-kids/games-and-activities/activities/make-a-speedy-bird-cake>

Turn over for activity list

Activity**CofE Es & Os****Introduction and game (30 minutes)**

Go through power point of birds and bird calls. Can everyone repeat back the sound of each Bird?

Use only bird cards only from animal pair cards pack. Students play the card game 'pairs' as a group at each table.

SCN 1-11a**Bird song – moving around game (10-20 minutes with reflection)**

See games section.

Cooperative Pelicans game (10-20 minutes)

(see games section)

Our own song activity (20 minutes)

- In the classroom, discuss how sound (such as bird song) transmits through the air (vibration, sound waves). For example <https://www.youtube.com/watch?v=gdGyvGPZ1G0>
- Go outside with musical instruments and voice. Try standing close together and far apart, round corners, with and without obstacles in between. Try this out in a forested area as well if possible. What conditions make it more difficult/easier? Why?
- Sound (such as bird song) transmits differently through different vegetation types. Sound travels across space (climate zones with more rain, usually results in more vegetation, obstructing sound travelling and altering songs) and time (There will be more vegetation at the start of spring into summer vs. mid-winter).
- Therefore birds might need to alter their song in different places, or move more at different times of the year, so their song will be heard.

SCN 2-11a

**EXA 1-01a,
1-09a
1-16a, 1-17a,
1-18a
EXA 2-01a,
2-09a 2-16a,
2-17a, 2-18a**

Activity (1 ½ hours)

- Students write and perform a story about the birds you've learnt about, using musical instruments, costume if possible, bird songs and movement.

Bird beaks



Learning Outcomes

Learning about the diversity and inheritance of animals, and how different animals can live together without competing over food.



Preparation time:

10 minutes to read over power point

Delivery:

Optional activities – see list for breakdown

Resources needed from resource box:

- Bird beaks
- Beaks, feet and food cards.

On CD:

- Lesson 6 habitat activity instructions and worksheet, worksheet answers and powerpoint.

Resources needed by teacher:

- See activity instructions



Home learning activity

After class

Draw a picture of a bird you see outside and label inherited and non-inherited features.

Linked eco-schools activity:

Biodiversity, School grounds: Did you know the blue tit's beak has grown 0.3 mm, to adapt to bird feeders in gardens! It must use bird feeders as a valuable resource then. Why not make a bird feeder that will fit the blue tit's beak! <https://www.rspb.org.uk/fun-and-learning/for-kids/games-and-activities/activities/produce-a-pine-cone-feeder/>

Turn over for activity list

Activity

CofE Es & Os

Wading birds find their food in the mud and sand of estuaries and foreshores, and in the soft soil of bogs and wet meadows.

Bird food activity (1 hour)

Each table have one of each bird beaks' (5) and habitat/food source (5). Complete worksheet 4 to describe beaks characteristics and match beaks to food source based in experiment.

SCN 2-01a

2nd Questions for discussion (30 minutes)

- How can birds live together in one place and get enough food?
See powerpoint.
- What other characteristics might affect a bird's survival in different habitats?
See powerpoint.

SCN 1-14a
SCN 2-14b

Inheritance (30 minutes)

- Are beak shapes, colours, lengths, inherited? What other characteristics are inherited?
- See powerpoint. Leave slide up as you play game the first few times.
- Forth River crossing game (see games section)
- Simon says game (see games section)
- Match the birds, feet and food cards.

Some fun to finish

Bird puppet show

- Put on a sock and some googly eyes on the arm and hand with the bird beak. Make a puppet show about what you've learnt!

FIELD TRIP

Bo'ness for bird watching or going to a local care home to make bird feeders with elderly members of the community.

Nesting: Making and protecting home!



Learning Outcomes

Learning why and how birds make nests and protect their young.



Preparation time:

10 minutes to read powerpoint,
15 minutes to collect materials

Delivery:

1 – 1 ½ hours

Resources needed from resource box:

- 4 smaller and one larger egg from box

On CD:

- Lesson 7 powerpoint

Resources needed by teacher:

- Materials to build a nest (twigs, leaves, hay, old cloth or t-shirts)
- If outside, students just collect what's in the area (twigs, leaves, stones)
- Mini-egg-sized sweets or grapes for wren and crow game.



Home learning activity

Before class

Ask students to bring in materials to build a nest (twigs, leaves, hay, old cloth or t-shirts)

After class

If it's the right time of year, keep your eyes peeled for birds' nests! You might even find abandoned ones at other times of the year.

Linked eco-schools activity:

Build a nest box! This is a greater undertaking, but could keep a bird safe from predators, warm in winter and provide a home for chicks in spring!
<https://ww2.rspb.org.uk/globalassets/downloads/kids--schools/teaching-resources/make-a-nest-box.pdf>

Turn over for activity list

Activity

CofE Es & Os

Why do birds make nests? (10 minutes)

Watch video of building a bird nest and look at pictures of different nests.

Students build their own nest. (30 minutes)

1st reflection

- How/why did you design and construct the nest this way? Remember there's no wrong way to build a nest! In nature, birds' nests can look very different from each other.

2nd

- Pick materials out of a list depending on what is most suitable for the task to construct nest for different species depending on bird's needs.

Reflection

- Share with class about what your group choose and why. Suggest improvements to each other's design/material use, imagining you could use any materials.

Put bird nests on display to show the students' great work

**TCH 1-09a
TCH 1-10a
HWB 1-24a**

**TCH 2-09a
TCH 2-10a
HWB 2-24a**

Wren and crow game (best done outside) (30 minutes)

See games section.

SCN 2-01a

2nd extension

- Nest survival behaviour continued. See powerpoint for video. For egg sample: compare and contrast reed warbler and cuckoo eggs in one of the nests.

SCN 2-14a

Migration: Imagination and direction



Learning Outcomes

Learning about why birds undertake the inherited behaviour of migration
Hearing a story, mapping and writing about the migration of dunlins.



Preparation time:

10 minutes to source opeisometer material

Delivery:

1 – 1 ½ hours

Resources needed from resource box:

1st

- Direction and hazard signs
- blindfolds

All

- globe

On CD:

- Lesson 8 Imagination migration recording, audio story about Deoiridh

the dunlin, powerpoint, student worksheet and answers, world map

Resources needed by teacher:

- Teach class about directions (NESW)
- Prepare materials to make opeisometer
- Opeisometer instructions: <https://www.ncetm.org.uk/public/files/261271/Case+Study+1+-+Ideas+for+using+map+scales+with+primary+children.pdf>

Home learning activity

Before class

Where would you like to migrate to? Why? Is it the weather? The people?

After class

Send postcard home from your imagination migration, to a friend or to yourself.

Why not fundraise to help RSPB protect our local mudflats, where Deoiridh feeds when arriving in the Inner Forth area to over winter. See here for ideas and details <https://ww2.rspb.org.uk/fun-and-learning/for-teachers/schools-wild-challenge/activities/fundraising/>

(Topics: Biodiversity, Health and Wellbeing, Global Citizenship)

HWB 1-13a / HWB 2-13a, HWB 1-14a / HWB 2-14a, HWB 1-12a / HWB 2-12a

Linked eco-schools activity:

The numbers of dunlin have dropped by 50% in the last 20 years because many of the mudflats where they feed have been destroyed. We can help Deoiridh the Dunlin by protecting mudflats.

Turn over for activity list

Activity

CofE Es & Os

The word migration comes from the Latin migratus that means “to change” and refers to how birds change their geographic locations seasonally. Fill in map worksheet.

SCN 1-14a
SCN 2-01a

Imagination migration (20 minutes)

Meditation recording.

In a circle students discuss (not where but) why they chose their place of migration.

HWB 1-01a /
HWB 2-01a
HWB 1-08a /
HWB 2-08a

Teacher poses the question for discussion: Why do birds want to migrate? (10 minutes)

In the classroom

- Migration is an inherited survival behaviour (link to forth river inherited/non-inherited game in Class 6)
- They go to places with more food available (reduces competition), better shelter and for warmer or colder weather.
- Migration also avoids disease spreading – parasite populations fall during winter (birds leave so no food source).

Migration activity (1 hour)

Listen to migration story about Deoiridh the Dunlin

1st – How did Deoiridh get here?

- Teacher sets up route using signs outdoors or in the classroom. One student is blindfolded and another student describes the route, using vocabulary such as the directions (NESW) or angles e.g. turn 90 degree angle to your right. Add ‘obstacles’ that Deoiridh faced and that need to be avoided. Route is changed for next student.
- Alternatively this can be done in pairs outside (one blindfolded, one not) with one leading the other around from one spot to the other. The blindfolded student has to explain the route at the end.
- Students draw a picture postcard to send home describing their blindfolded journey.

2nd (1 hour)

Complete worksheet 5: Deoiridh’s journey and writing a postcard home. Bird game online: <https://www.rspb.org.uk/fun-and-learning/for-kids/games-and-activities/online-games-for-kids/dangers-of-migration>

MTH 1-17a
LIT 1-20a
LIT 1-22a

MNU 2-10c
MTH 2-17c
/ LIT 2-20a
LIT 2-22a

Food chains and webs



Learning Outcomes

Understanding the interconnection and energy flow between animals and plants through games and activities.



Preparation time:

10 minutes to read through games and source ball of string

Delivery:

Varied – see activity list.

Resources needed from resource box:

- Food chain cards (land or pond)

Resources needed by teacher:

- Ball of string



On CD:

- Lesson 9 powerpoint

Home learning activity

After class

We need you! Become a citizen of science and make your Inner Forth area wildlife sighting count! You can report any animals you see from any food chains we've learnt about. Check out the Inner Firth Landscape Initiative project

'Nature Counts' here <https://www.brc.ac.uk/irecord/enter-inner-forth-records>

Linked eco-schools activity:

Food and environment/School grounds/Biodiversity: Support your local food chain using less energy (all vegetables), and others such as pollinators. Why not investigate how much food you can grow in a pallet? <https://www.keepsotlandbeautiful.org/media/1557478/opp-pocket-garden-comp-2017.pdf>

Turn over for activity list

Activity

CofE Es & Os

These activities can be added on at the end of lesson 4 or woodland and pond field trips.

All

Food chain games – see games section pages 38-39

2nd

Energy flow pyramid game.(10-15 minutes)



Students stand in pyramid formation. First level is the plants. They receive energy from the sun (give these student's a ball of orange play dough each). They 'eat' nine tenths (9/10), and pass on the rest (1/10) to the next level (e.g. bugs). This continues all the way up the pyramid. How much food/energy does the top predator have (1%), in relation to how much food/energy went into the pyramid (100%). Why is this? Where does energy go if it doesn't get destroyed? Eaten for energy and used for breathing and growth and lost by heat loss (for example peeing!).

SCN 1-02a
SCN 2-02a
HWB 1-28a
HWB 1-04a /
HWB 2-04a

'10% stretch' / older year students (15 minutes)

To write on the board and students copy into math book.

For example Grass – Cow – Human

Type	Eaten	Tissues	Faeces, urine and gas	Respiration
Amount	100 kJ	4 kJ	63 kJ	? kJ

SCN 1-04a

MNU 2-07a

MTH 2-15a

How much energy is used in respiration and given out as heat?

Total energy 100kJ = 4kJ + 63kJ + energy used in respiration.

So energy used in respiration = 100 - 67 = 33kJ

HWB 2-34a

Energy efficiency.

How efficient is energy transfer to the next level of the food chain?

E.g. The cow is 4% efficient at converting its food into food for the next trophic level.

Efficiency of energy transfer = (energy transferred to next level x 100) / energy from previous level

Efficiency of energy transfer = (4kJ x 100) / 100kJ

Efficiency of energy transfer = 4%

SCN 2-02a
Continued

SCN 1-02a
SCN 2-02a

All

Food webs

Food web game (20 minutes)

See games section.

"When we try to pick out anything by itself we find it hitched to everything in the universe" - John Muir (20 minutes)

Thinking back to woodland or pond field trip, or from what we've learnt today, can you draw an animal/plant and what it's connected to? What does it eat and what eats it do you know? Does anything live in or with it? What happens when it dies?

Discovering Life on the Inner Forth



Learning Outcomes

Investigating different aspects of the inner forth including local famous people, past and present jobs and local wildlife.



Preparation time:

15 minutes to read over materials

Delivery:

1 – 1 ½ hours

Resources needed from resource box:

- Storyboard bags (6)
- Magnetic map up for reference
- 'Inner Forth; formed by nature, shaped by people' DVD

On CD:

- Lesson 10 storyboard worksheets (6-11) and Blackness Castle worksheet.

Resources needed by teacher:

- Anything from the classroom you could add to bags (e.g. more farmer figures, more small animal figures)



Home learning activity

After class

See if you can follow up on finding out your local areas of wildness and spending time there. "The world is big and I want to have a good look at it before it gets dark." – John Muir

Linked eco-schools activity:

See lesson four and field trips for wildlife home making activities.

Turn over for activity list

Activity

CofE Es & Os

Recap Lesson 1 by looking at playground maps. Have you thought about your sense of place since doing these maps? Is there anything you would add to your map that's changed since you drew it?

This is a good follow on from Lesson 2 'Exploring Inner Forth's Treasures.'

Watch video (Inner Forth; formed by nature, shaped by people) for context. (10 minutes)

Split the class into 6 groups. Each group will get a bag with a worksheet and props to help them learn about an aspect of life in the Inner Forth. (30 minutes)

The 6 bags are

- Farming
- Trade
- Coal mining
- People
- Wildlife
- River

Groups investigate their bags and come up with what they want to share with the rest of the class. This could be in the form of a poster or just speaking/presenting as a group. (20 minutes)

Summarise what other groups say by taking notes under topic headings (farming, trade etc)

The suggested field trip here is Blackness Castle, where we can learn about variety of aspects touched upon today. See field trip section for details.

SOC 1-08a
SOC 2-08a
SOC 2-03a
SOC 1-07a
SOC 2-07a
SOC 1-14a
SOC 2-14a
SCN 2-01a
SOC 1-06a
SOC 2-06a

LIT 1-05a
LIT 2-05a

Human-Life in the past



Learning Outcomes

Learning about the lives of people from the past through video, play and creative writing reflections.



Preparation time:

20 minutes sourcing costume materials (if doing play)

Delivery:

Varied options – see activity list breakdown

Resources needed from resource box:

- Era pictures

Resources needed by teacher:

String and pegs/paperclips
If doing play: materials for costumes



On CD:

- Lesson 11 Story of Coal

Turn over for activity list

Activity	CofE Es & Os
<p>Recap</p> <p>Watch 'Inner Forth; formed by nature, shaped by people' DVD (10 minutes)</p>	
<p>Make a timeline of era/land use pictures (20 minutes)</p> <p>In groups of 4, students pair up the pictures to the date. As a class, students work out how to stand in a line amongst themselves in chronological order.</p>	<p>LIT 1-04a LIT 2-04a</p>
<p>Daily life comparisons with coal mining era</p> <p>Listen to poem 'Dear Grandad' – a day in the life of a coal miner. https://www.youtube.com/watch?v=tEMUKTntm8I, https://www.youtube.com/watch?v=3idzDq3LZMs and 'The Driving Force' DVD which covers in detail different how historical aspects of 'railways and coal changed the face of our wee country'. Contact: DavidTryst@aol.com to borrow or buy</p>	<p>SOC 1-02a SOC 1-13a. SOC 2-02a</p>
<p>(30 minutes for below activities)</p> <p>1st</p> <p>'Day in the life of' written piece, poem or comic strip, comparing daily lives then to now – going to school or work, helping at home, what they did for fun.</p> <p>Look at maps compared maps to now, how have they changed?</p> <p>2nd</p> <p>Compare and contrast then to now (refer to above questions) and have a discussion or write about the similarities and differences.</p>	<p>LIT 1-04a LIT 2-04a</p>
<p>Selected one period to research. (extended activity of any time range)</p> <p>Make costumes (<i>these could be as simple as making coal mining hats, simple spears as hunters and gatherers or a sash for merchant traders!</i>)</p> <p>1st</p> <p>Free play in that era.</p> <p>2nd</p> <p>Students write and perform a play, focussed on one time period (such as coal mining) or demonstrate the change overtime based around questions 'Why were these people/groups/events important? How have these past events shaped Inner Forth landscape and society, and helped develop the Scottish nation?'</p> <p>Scottish Mining Museum has exhibitions and an interactive suite about the Scottish coal heritage. See CD for more information about exhibitions.</p>	<p>SOC 1-04a LIT 1-07a SOC 2-04a LIT 2-07a SOC 1-03a EXA 1-01a EXA 1-12a EXA 2-01a EXA 2-12a EXA 2-14a SOC 2-03a SOC 2-06a</p>

Climate change



Learning Outcomes

Learning about weather and climate, climate change and the impact of climate change on our local area including people, plants and animals through video, experiment, discussion and written worksheets.



Preparation time:

20 minutes to read over powerpoints and worksheets answers

Delivery:

Varied- see activity list (this lesson can be broken into 2 classes)

Resources needed from resource box:

- Tray (incl. hard and soft sponges).
- Globe showing different climatic zones.
- 'Inner Forth; formed by nature, shaped by people' DVD

On CD:

- Lesson 12 worksheets (first and second level), contour map and powerpoint.
- Skinflats field trip information.

Resources needed by teacher:

- Ice and a small heater/ lamp.
- Moss.
- Growing pots, soil and plants or seeds.



Home learning activity

After class

2nd

Research possible solutions to climate change.

Linked eco-schools activity:

Any previously mentioned from other classes – all topics are towards tackling climate change! See: <https://www.keepsotlandbeautiful.org/sustainable-development-education/eco-schools/ten-topics/>

Turn over for activity list

Activity

CofE Es & Os

PART I (2 hours)

Weather and Climate worksheet and game. (20-30 minutes)

Weather is the day-to-day atmospheric conditions of a particular place.

Climate is the average weather of over 30 years. There are different climate zones all over the world. Look at habitat zone with the class. Students fill out worksheet.

Weather/climate game.

Students design small scale experiment to investigate: *How do plants grow in different conditions and what does that tell us about what they need to survive?*

For example, place plant pots;

Beside the window or in a greenhouse representing a warmer environment or with lots of light,

Outside during winter or in a cool room for a colder environment,

Inside sheltered and not watered vs outside unsheltered and watered.

- Remember: to keep all other variables consistent except one being tested

What do our local plants need to grow and develop? Compare plants growing in different conditions of our experiment. Which plants grew the best? Why?

What is climate change? (20 minute video)

Watch Video 1 (3.00 to 4.44 minutes) followed by Video 2 (whole video)

Video 1: https://www.youtube.com/watch?v=x_sJzVe9P_8

Video 2: <https://www.youtube.com/watch?v=PqxMzKLYrZ4>

Students fill in this part of their worksheet.

SOC 1-12b
SOC 2-12a

SOC 1-07a
SOC 2-07b

Climate change in the Inner Forth (1 hour)

How will climate change impact our Inner Forth area?

We are in a 'low-lying' area (refer to map, compare school's location school to Ochil mountains).

Fill 'river' part of tray with water, representing Inner Forth area. Heat ice with lamp or heater, representing warmer temperatures causing ice caps to melt, increasing global sea level rise. This will cause flooding in our Inner Forth area because we are low lying, and storm surges that will erode the land.

What can we do about flooding in our Inner Forth area?

We can use hard or soft engineering techniques by the coast. Add materials to land side of tray. Pour more water into river side until 'flooding' happens.

1. Hard engineering: Sea walls and agricultural land (hard sponge, water not absorbed by land, water makes it to urban area)
2. Soft engineering: Habitats such as wetlands or salt marsh (soft sponge or moss, absorbs water, does not make it to urban area)

SOC 2-08a

SOC 2-08b

Discussion about what students think is better.

Which land use absorbs the water better? So which land use will protect our towns better from flooding?

Which land use is better for wildlife? The more biodiverse habitat which is the saltmarsh. Or, farmers can put in hedgerows for wildlife.

Which land use is better for humans? Saltmarsh benefits physical and mental wellbeing of community, whereas agricultural land creates jobs and food.

SOC 2-12a

What's the flooding solution? (15 minutes)

Salt marsh acts as an amazing buffer between the stormy waves and the shoreline and could protect us from these storms. However, since the 1600s, we have lost over 50% of our intertidal habitat.

What about creating more natural land?

Watch chapter 3 of DVD. Student fill in this part of their worksheet.

SCN 1-03a
SOC 1-12b

PART II (1-2 hours)

How would climate change impact the plants and animals populations here?

A changing climate

Tying it all together through discussing the question 'How would climate change impact the plants and animals populations here?'

Each table ponders a different question and presents to the rest of the class. Go through slides for (some) impacts.

In groups discuss the impacts. (see answers worksheet)

If the plants are impacted, and they are less able to grow in this climate, how would a changing climate impact the food chains we learnt about?

How will bird populations be impacted, on their migration routes we learnt about?

How will we be impacted by a changing climate, in our towns, homes, school and community?

How will a changing climate impact farmers?

This class follows into Lesson 13 – Solutions! Suggested field trip here to go to RSPB Skinflats reserve and learn about the impact of climate change. Parts of this can be done as a classroom activity too.

SCN 1-02a

SOC 2-08b

Sources of and solutions to pollution



Learning Outcomes

Learning about the sources of and solutions to pollution through experiment, games and art work.



Preparation time:

30 minutes (sourcing materials)

Delivery:

1 ½ – 2 hours

Resources needed from resource box:

- Tray. Hard sponge. Birds feather, bird feather covered in oil.
- Story bag – river (Human life section, Lesson 10).
- 'Living without single-use plastic' by MCS booklet.

On CD:

- Lesson 13 powerpoint
- Storyboard worksheet about rivers from lesson 10

Resources needed by Teacher (hopefully all household items!)

- Water (2-3 litres, enough for each student to have half a bowl full in pairs).
- Water mixed with: 1 bottle of Brown food colouring (fertiliser) and green food colouring (pesticide).
- 1 bottle of Oil (vegetable oil) mixed with cocoa powder and 1 packet of cotton balls.
- Ash (from fire/1 bag of ground almonds).
- Cut up pieces of 1 plastic bottle 1 tub of green playdough.
- Ask each student to bring in a plastic bowl/ tupperware, spoon and matchbox or stick.
- Poster making materials.

Home learning activity

Before class

Ask the students to bring in plastic bowls from home, and to keep a count of how many plastic bottles they use this week.

After class

Can you ask at home to switch to a renewable energy source? It is cheaper and better for our beautiful world! For example www.Bulb.com

Linked eco-schools activity:

Write a letter to your principal or eco-council to ask –

1. What can be implemented into your school to reduce any waste that might end up in the river such as plastics, paper or food waste? (Litter and waste management.)

2. What's your school's commitment to organic food? (Food and environment)

We can switch as a school to 100% renewable electricity for example www.Bulb.com. It's cheaper and better for our beautiful natural world! (Energy)

Turn over for activity list

Activity**CofE Es & Os**

Salt marsh ecosystem is a valuable component of coastal protection schemes, preventing the flooding that we learnt about from the previous lesson. We need to protect and not pollute it!

SOC 1-14a**Experiment (1hour)**

Together use tray as demonstration (see activity instruction sheet). Students do their own experiments shallow water in individual bowls filled with shallow water or as pairs while filling in worksheet.

SCN 2-03a**SCN 2-18a****SOC 1-16a****TCH 1-02a**

Together we investigate different pollutants in the water:

Plastics**Fertiliser & pesticides****Oil****Ash**

Bioaccumulation game. (20 minutes) What can we do about pollution in our river? What ways can we live in an environmentally responsible way to reduce pollution in our River Forth? (20 minutes)

SOC 1-08a**SOC 2-08a.****TCH 1-02a****TCH 2-02b****TCH 2-02a**

(Together work through storyboard worksheet/bag and power point slides)

Draw a poster in tables about what you've learnt or flick through the 'Living without single-use plastic' by MCS booklet and summarize in a poster.

People and land



Learning Outcomes

Role play of community council meeting role play to discuss land use conflict



Preparation time:

10 minutes to source materials
10 minutes to read over plan.

Delivery:

1 ½ hours

Resources needed from resource box:

- Magnetic map with habitat magnets. (Lesson 4)
- Badges of 5 groups meeting at community council.

On CD:

- Ollie oyster catcher recording.
- Lesson 14 powerpoint (this explains role play activity in the notes)
- Lesson 14 background information and worksheets

Resources needed by teacher:

Read over powerpoint to help you with role play activity
Grey /brown – ish bed sheet.
Cups of water for students in pairs.



Home learning activity

Before or after class

Use Google maps to explore land use in the Inner Forth and further afield virtually <https://www.google.co.uk/maps> and/or go on a walk round your town/village and see how many different land uses you can spot, this could be a homework task or a class outing.

After class

How can you get involved in land development and decision making in your area? What's being developed in your area and how can you have a say in it?

Linked eco-schools activity:

Global citizens Can you write to your local council about a relevant land use development?

Turn over for activity list

Activity**CofE Es & Os**

Refer to magnetic map showing variety of land uses around the Inner Forth.
Different land uses want to expand. *Why?* Have a discussion about an increasing population needing more housing, more roads for cars, more industry for jobs.

Listen to Ollie the oystercatcher story/learn song. (10 minutes)

1st (20 minutes)

Ollie the Oyster catcher game outside.

2nd (20-30 minutes)

Go outside at look at wildlife under a rock/area of woodland vs a pavement. *What's the difference between natural area, representing woodland/nature reserves, and man-made area, representing urban streets?* Pour water onto soil and onto pavement. *What happens to the water?* It is absorbed more easily by the soil, whereas it runs along the pavement and is not absorbed. *So, what would be the impact of increased urbanisation be on flooding? How will human activities impact the animals and plants of our natural world?*

LIT 1-08a
SOC 1-08
SOC 1-13a
SOC 1-16a

Role Play (40 minutes)

The class will work in groups to role play a community council meeting where they will discuss and debate three different uses for a fictional area of land near the river Forth that is for sale.

Roles are

- Farmers
- Housing developers
- Wildlife charity
- Local wildlife
- Community councillors

LIT 2-08a
SOC 2-08b
SOC 2-15a
SOC 2-16a
SOC 2-17a

See notes on powerpoint slides for further details.

All Energy availability conversation. (10 minutes)

There are 6000 kilocalories available in green plants per square metre per year. There are 600 kilocalories per square metre per year available in bodies of herbivores. What does this mean for our food practises? With more people and less available land for growing food in the world today, what makes sense for humans to consume more of?

Creating a revolution of solution



Learning Outcomes

Positive solutions to how we can tackle climate change and give nature a home together.



Preparation time:

10 minutes to read through powerpoint

Delivery:

1 ½ hours

Resources needed from resource box:

- None specific, but you can include anything from whole project

On CD:

- Lesson 15 powerpoint
- Bo'ness Bird Bingo

Resources needed by teacher:

Poster materials



Home learning activity

Before class

Think about solutions to what we've been learning about (climate change, flooding, pollution, land use development)

After class

Go Forth! Help give nature a home so we can live together around the Inner Forth. Put your poster into action. Share with the rest of the class what you got up to. Email RSPB about your project.

Linked eco-schools activity:

Any activity listed so far. You can find more on the website <https://www.keepsotlandbeautiful.org/sustainable-development-education/eco-schools/ten-topics/>

Turn over for activity list

Activity

CofE Es & Os

Brain storm (10 minutes)

What can you do to give nature a home? Given what we've learnt about the problems faced on the Inner Forth (climate change, flooding, pollution, land use development) what ways can we look after our local animals and plants? Were you able to do any of the bug, bird or butterfly home activities? Write down as many as you can think of.

SOC 1-08a
SOC 2-08a
SOC 2-19a
TCH 1-02a
TCH 2-02a

Learn (20 minutes)

Go through powerpoint about the different things we can all do.

Make a poster (30 minutes)

Leave up the last slide and ask each student to draw a poster based on question;

*What **will you do** to live in a more environmentally responsible way?*

Write in a paragraph below from everything we've learnt based on question
Why do you want to give nature a home?

Share with the rest of the class why you want to give nature a home and just one thing you will do.

Suggested field trip here to go to Bo'ness and be a solution to pollution by litter picking! Bring the bird bingo activity with you.

Teachers confidence tips and tricks

As a teacher I am well aware you have a good handle on how to take your students outside! However, feedback suggested a number of teachers would appreciate more direction when going outside.

Here are some basic tips and seasonal tricks to set you up when taking your class outside. I hope this helps you all to have fun, learn and feel more confident when outdoors. The next few pages explain preparation before (kit list, what students could bring and safety checks) and during (activities and pointers) outdoor sessions.

BASIC TIPS

In the classroom

- Make boundary markers for example bunting, flags, or decorated sticks to put up on site.
- Talk about what you'll be doing outside, go through lesson plans to settle nervous of students who aren't used to going outside.
- Make a group agreement for going outside. This will be a different set of agreements than the classroom setting. Ask the students what they think they would like everyone to do, to ensure everyone is safe and has a good time.

Suggestions include:

- Look out for each other, the adults and the plants and animals living on the site
- Always stay within the agreed boundaries
- Listen when the instructions are given and come into the centre where your teacher is when you hear the wolf call (see below)
- What to do if a dog comes off the lead (best practise is to stand still)
- Have fun!

Specific agreements depending on activity and season

- Only walk around pond. Lie on tummys or kneel when pond dipping.
- No climbing on log piles particularly on wet and icy days

On site

- Begin and end in a circle, so everyone can see and hear each other clearly.
- In the circle check in with how everyone is feeling. It's interesting to see the transformation at the beginning and end of an outdoor session.
- Have a 'talking stick' so everyone has a turn to share how their day was.
- Pace out the boundary markers together, so everyone is clear where the boundary is.
- Discuss any potential risks as you get to know the site.
- Have a 'wolf call' that will gather everyone together quickly. Students are clear that when you make a wolf call, they respond with the same call and come together. You can use any other call (crow, owl) or a whistle.

KIT LIST

Essential

- A list of students and helpers/other teachers including relevant medical information/medicine
- Emergency procedure and risk assessment
- First aid kit such as St John Ambulance first aid kits.
 - Plasters, antiseptic wipes, sterile eye wash, nitrate powder-free examination gloves, sterile dressing in a range of sizes, Burnshield Hydrogel, emergency silver foil blanket, surgical scissors, triangular bandages, instant ice pack (e.g Kool Pak) ,pop up emergency shelter, emergency survival bag
- Mobile phone or walkie talkie
- Tarpaulin and set of bungee cords/small ropes to be able to make quick shelter
- Whistle to gather group or attract attention in case of an emergency
- Spare set of clothes for at least one child
- Notebook and pencil
- Wet wipes, tissues, toilet roll

Recommended

- First aid kit such as St John Ambulance first aid kits.
 - Trees, woodland and pond minibeasts, bird poster from resource box
- Camera/iPad
- Torch
- Penknife

From the box (this is what is available, but depends on what activity you're doing)

- Bug viewing glasses
- Hand held nets
- Blindfolds
- Pooters
- Water testing packs
- Identification cards

ASK STUDENT'S TO BRING IN

Winter

- Warm hat and gloves
- Waterproof coat and over trousers
- Spare trousers (not school uniform)
- Long sleeved wam top and layers
- Extra or thick socks
- Wellington boots
- Named s pare set of warm clothes

Summer

- Sun hat
- Sunblock
- Thin, long sleeved top
- Trousers
- Wellington boots
- Waterproof jacket

I appreciate that not all students can get all these items. I have taught in schools that invested, as a school, in waterproof overalls and wellies. Perhaps this is a reasonable proposal for your school to spend money. They would be a valuable resource for children for years to come, as to be comfortable outside increases the learning, physical and emotional ability of each student.

Some Outdoor & Woodland Learning (OWL) have kit to rent or borrow if your school is a member. Contact your local group for details for example
http://www.owlscotland.org/local-groups/clackmannanshire_fei_cluster_group

Warm hat and gloves	Yes/No	Additional comments
Risk assessment written and checked		
Pre-site check to assess <ul style="list-style-type: none"> • Access to the site • Boundaries • Canopy, shrub, field and ground layers • Weather • Fire pit area and surrounds • Shelters and other structure • People factors e.g. dogs, litter (glass) 		
Does the site have phone reception, or do you need walkie talkies/nearby landline?		
Have relevant medical info and permissions been sorted?		
Is there a first aider designated, and a place for first aid kit to be easily located?		
Are there the sufficient number of adults present and are they PVG checked?		

Before going on site	Yes/No	Additional comments
List of those attending		
Do students have spare clothing?		
Do session leaders have <ul style="list-style-type: none"> • Spare clothes for children • First aid kit • Eyewash • Medicines of students • Tissues • Charged mobile phone • Survival bag • Snacks and drinks if required • Bowls, towel, handwash, water? 		
Activity plan and appropriate equipment		

During the session	Yes/No	Additional comments
First aid kit easily located?		
Regularly counting group?		
On-going risk assessments taking place?		
Are group members sufficiently warm/ cold/sun protected?		
Are the physical needs of the group being met, e.g. shelters, refreshments etc?		

Adapted from the 'Health and Safety Guidance at Forest School' leaflet, Forest School Association.

SEASONAL TRICKS

These might require a bit more material than is provided in the resource box, but mainly the activities try to use recycled, easily sourced or natural materials.

Spring

Spring is a time of new lambs bouncing around fields with excitement and buds beginning to bloom as another new year begins.

Spring cocktails, witches potions, fairy perfume or where-ever their imagination takes them!

Get ready: for edible cocktails pick herbs and flowers (not the whole plant or whole flower head). For example, rosemary, lavender, garlic mustard, chickweed, bramble leaves, dandelion leaves and flowers, courgette flowers, sage and thyme leaves and flowers are all edible sweet smelling wild herbs that are full of antioxidants and good vitamins! Make sure you pick ones away from a main path and therefore dog pee. For inedible potions... anything!!

Go: *each* student brings a cup and fills it with foraged herbs. Fill with water and allow to stew for a while. You could also bring an ice tray and make ice cubes from edible herbs and flowers.

Find a tree: like a spring lamb

Get ready: Sheep have field vision of around 300 degrees (they can see behind their head), but they have poor depth perception. Sheep compensate their poor eyesight with an excellent sense of hearing. Use the blindfolds to explore the land, like a new lamb.

Go: *In pairs*, one student guides another student around from a specific point until they reach a tree, in whatever way in between. Once arrived the blindfolded student describes the feeling of the tree. Then, they are guided back to the starting position. Once arrived the blindfolded students takes off the blindfold and guesses what tree they met! This builds a sense of trust between the students and focuses the student to guide or listen.

Recycled scare crows: keep the new buds safe

Get ready: If you can gather old CD's (ask students, friends, even charity shops can give them for free from experience) these are excellent bird scarers. Use these or old tin cans.. something shiny! Gather art and craft jewels, shiny paper/material (not glitter the microbeads can be ingested by animals and hurt them)

Go: decorate CD or make tin man out of shiny material in whatever way you can think of. Hang shiny objects in school or local community garden, or bring home for garden or windowsill herbs. If no one has access to a garden you could also make a wind chime out of an upside down pot surrounded by shells, bells and stones to make beautiful tones!

SUMMER

Summers a season for discovery, blossoming, going outside and lots of growing plants and animals to look at!

Natural storyboards:

Get ready: Use natural materials such as sticks, leaves, seed pods, flower petals (don't pick the whole flower as the bees need these!)

Go: Each team of 4 makes 3-4 similar sized frames on the ground out of sticks. Each group thinks of a well-known story and together they make a picture out of natural materials in the area. Each group share with the rest of the class, who have to guess the tale!

Stick frames:

take a 'picture' of what's around you – look through the frame and what do you see?

Get Ready: each student gathers four strong, rot-free frame sized sticks.

Go: To bind the frame you need x4 30cm of string. Tie knot as below. Decorate with surrounding leaves, grasses, petals etc or coloured wool.

Summer senses

Get ready: Try making up a 'five senses' scavenger hunt: e.g. find something smooth, rough, that makes a loud or quiet noise, that comes from a plant, that is red, that you eat, that smells good.

Go: Students explore to find objects. Perhaps add an element of storytelling to this exercise, using the objects found as story props/stimulus.

Autumn

Autumn is a time of abundance of colourful leaves and harvest of berries, mushrooms, apples and more. It's a time of wonder and our final hurrah before we begin winter hibernation.

Colourful pictures

Get ready: Colours galore outside, not much need to prepare other than finding a site with lots of leaves!

Go: Make a mandala together or arrange natural materials in a shape of something such as a fire or phoenix. Alternatively, each student could make a self portrait out of natural materials.

Mushrooms stamps

Get ready: Autumn is an abundant time for mushrooms. Try to look for Ceps in the wild or buy from local produce. Cut mushroom caps into an appropriate shape to use as stamps in the classroom using natural paint dyes for example purple beetroot juice, yellow turmeric paste, red berries, green spinach. That way, you can still compost into the earth after use.

Go: students become artists – "An artist isn't a special kind of person, every kind of person is a special kind of artist"

Bonkers for conkers!

Get ready: The conker game has been played for hundreds of years by children, and those who are children at heart! Basically, put a whole through a conker using a nail or skewer. Put a string through the conkers and tie the string. The aim of the two-player game is to strike each others cracker until one breaks!

Go: Take it in turns, with one holding the conker still and the other having a shot, then swap. Watch out for flying pieces.

Pine cone animals.

Get ready: Along with pinecones that fall in late autumn, you can find natural 'body parts' outside such as sycamore helicopter seeds for feet, sticks for arms, and vine for a tail.

Go: Put what you have found together to make a little creature. Add some googly eyes or paper eyes to the animals. In groups, make up a story around the animals.

Winter

Winter is a time of silence, dormancy and rest after a busy year. It is also a time to gather indoors and go for long winter walks in the snow.

Natural wreath: *a warm indoor activity for Christmas time*

Get ready: From December until March each year you can get willow from worldofwillow.co.uk or try and find a willow tree in your local area. Simply cut lengths of 1-1.5m. Pinecones can be found from late autumn and still hang around through winter.

Go: twist the willow into a circle, add the pine cones to the edges using wire or string.

Den building: *Brrr! It's a good time to make a den today to keep us warm!*

Get ready: Check the space for any dead branches hanging that might fall from above. Add to risk assessment trip hazards. Try to leave the environment as you found it.

Go: See what your group come up with. A suggestion is to use a tarp (tie a rope between two trees about 2m high, hang the tarp over and peg into the ground at either side to make a triangle. Set a ground sheet below to sit on.) Alternatively you could make a den out of fallen branches, using the same idea (one branch between two trees, rest branches on either side to make a tent shape. Start with larger branches, then add smaller and smaller ones.

Bird feeders: Help the hungry birds! At a time where wild food is scarce, birds need our help to get enough food.

Get ready & go: There's multiple ways to make bird feeders, depending on your students allergies, cost and availability. E.g. you could make a mix of lard, oats, birdseed, breadcrumbs and wrap it round a pine cone, or shape and freeze in an old yoghurt pot and attach to a tree branch. Or, you could use recycled materials such as an old juice carton (1 litre). Cut out a little door on one side and add a stick below it for birds to perch upon. Decorate with natural colours such as old scraps of green and brown paper, and fill with birdseed!

Information drawn from the author's own experience and the books below.

Bilton, H. and Crook, A. (2016). ***Exploring Outdoors Ages 3-11***. s.l: Taylor and Francis.

Schofield, J. and Danks, F. (2012). ***The Stick Book: Loads of things you can make or do with a stick (Going Wild)***. 1st ed. Frances Lincoln, pp.32, 37.

Worroll, J. and Houghton, P. (2016). ***Play the Forest School Way***. 1st ed. Watkins Media, Watkins Publishing, pp.43, 57, 39.

Environmental and cooperative games

Weather and climate games

CofE: SOC 1-12b, SOC 2-12a, EXA 1-09a / EXA 2-09a

Inside and outside

resources: brown/grey bed sheet

The teacher says a number on a scale of 1 – 10, with 10 being the greatest intensity of the weather condition. Students act out what the weather is or what it feels like to be in it e.g. ‘windy weather 10’ might be pretending you can barely walk forward, or that you’re a hurricane etc., whereas ‘windy weather 3’ might be a light flowing breeze. Other examples could be wet, sunny, cold. Teacher changes the numbers every so often and says STOP! Everyone freezes, and this is a snapshot of time – this is weather in one day (weather), whereas the whole game (overtime) is the climate. This could be played after learning about climate zones: desert, polar, temperate and tropical!

Ollie the oyster catcher game

CofE: SOC 1-07a SOC 2-08a

Inside and outside

resources: brown/grey bed sheet

Ollie the oyster catcher lives with his family and friends on mudflats by the Inner Forth (the brown bed sheet). Everyone stands on the bedsheet. What happens when the bed sheet gets built upon? Reduce the size of bedsheet, keeping the same number of people. How does it feel to all be squished in? Do you think you can get as many cockles and mussels? Reduce bedsheet more and more. If people ‘fall off’ they sit down as houses. Keep folding until there’s one student left. Ollie has less space to get food if the mudflats get smaller.

But we need more food and space too. How can we look after our community and wildlife?

Ollie's story

(chorus)

Where's my cockles and mussels....

I like them alive alive oh

alive alive ohh

singing cockles and mussels

alive alive ohhh

(versus)

In grangemouths fair city, where the rivers so pretty

I first laid my eyes on sweet mudflats, alone

Now they seem decreasing in number

They're building on it, and no wonder

What a bonnie, little river

The inner Forth is

I've seen many a summer,

On these mudflats with my lover

We eat cockles and mussels

By the 1000s right here

But they seem decreasing in number

And sure it's no wonder

What a bonnie, little river

The inner Forth is

I hope the humans save us

Our mudflat is dear to us

And my friends and dear family

We eat cockles and mussels here

Help us protect the mudflats in number

It's a place full of wonder

What a bonnie, little river

The inner Forth is

Animal pair game (moving around activity).

Inside and outside

CofE: SCN 1-01a SCN 2-01a

resources: animal cards

Each student gets a card and has to find their pair but without showing anyone their card or saying what they are. They can ask questions to get clues about what animal other people have e.g. have you got red legs? What season are you here for?

Once everyone is matched, the class sit down. Put up the habitat pictures on power point and every student with an animal in the corresponding habitat gets up to show the rest of the class. Ask the students to tell the rest of the class a little bit of what they learnt about their animal.

Comparison discussion: how many different animals were present in the woodland compared to the industrial site? Or the wetlands compared to the urban areas? Why is this?

These cards can also be used to play 'pairs'.

Bird song

Inside and outside

CofE: SCN 1-11a, SCN 2-11a

resources: blindfolds, elastic band

Everyone is blindfolded. One person is quiet and everyone else makes bird calls (of their card). Walk slowly with eyes closed. If you lightly bump into the silent bird then you become silent too, walking together with the silent bird until eventually everyone is silent.

Reflection: Compare how you felt in the silence and noise. Hold hand to throat and compare silence and noise of your voice. How is sound created? How do you change pitch? Use elastic bands in pairs as examples of vibration and pitch. Imagine how tight the chord and fast vibration would be for high-pitched birds!

Cooperative Pelican

Inside and outside

Resources: oranges for everyone

Pelicans fish cooperatively, which means they work together to get enough fish and then share with everyone!

Each student carries an orange on their head (a fish) and walks around the room. If you drop your orange, you can't pick it up, but you can ask another pelican to place it back on your head, without dropping their orange. At the end of the game (set amount of time e.g. before 'sunset' – 10 minutes or so), if everyone has an orange on their head, you can eat them all together, because you helped each other.

Wren and crow game

Inside and outside

CofE: SCN 2-01a

resources: miniegg sized sweets

Crows are one of the most common predators of bird nests. They actively search hedgerows for nests and scan the ground from trees for nesting birds.

They make a small puncture in the side of the egg, then insert their upper bill into the hole to lift the egg and drain the contents. Wren's nest low, sometimes near the ground of hedgerows.

To play: Teacher hides 3 piles of minieggs. In pairs, students hide their nest somewhere safe. All students are Wren's except one pair, who are the thieving crows. The aim is to find the eggs and bring them back to your nest (one at a time). The two crows can steal the eggs from your nest, so one partner needs to protect the nest whilst the other flies to find the eggs. Wren's cannot take eggs from the crow's nest. Whose nest was in the safest place? Who were the fastest fliers to get eggs?

Food chain game

Inside and outside

Links CofE: SCN 1-02a, SCN 2-02a, HWB 1-28a

resources: none

For the active type:

Like rock paper scissors, but instead it is midge, wildcat and salmon. Divide the class into 2. Each half decide amongst themselves on an animal. They meet facing each other in the middle of the room. The teachers says 3, 2, 1 and they act out their chosen animal (this is agreed before). Depending on the food chain the predator tries to eat the prey. The prey runs back to their wall/den (safety), or is caught and taken by the other team. So, the wildcat eats the salmon, the salmon eats the midges and the midges bite the wildcats.

Reflection: How do you feel after playing the game? Happy (physical activity contributes to wellbeing) or sad (perhaps if you're team lost – our feelings can change depending on what's happening around us). Do you feel tired? Why? We've used the energy we gained from our breakfast/lunch! Our bodies need the energy food provides us with to survive.

Similarly to how we need our lunch (some of us this could have been eating other animals), animals eat food in the food chain we've learnt about, in order to survive.

To calm down:

Food chain tai chi

Inside and outside

Resources: Take out animal pair cards and separate into food chains as prompts if necessary.

Get into threes and each person makes up a tai chi move of an animal or walks slowly as the animal from different levels of the food chain. Make up a routine of the food chain in order, so all three students do all three moves. Share with the rest of the class.

Fox-Rabbit-Leaf

Inside and outside

Resources: scarves/pieces of cloth

CofE: SCN 1-02a, SCN 2-02a, HWB 1-28a HWB 1-04a / HWB 2-04a HWB 2-34a

Divide class into three groups; foxes, rabbits and leaves. Foxes form a circle around the rabbits who have 'tails' (scarves). Leaves are on the outside and cannot move. In each round (2-3 minutes).

Rabbits must try and 'tig' leavaes to eat – as many as possible, without the foxes tagging them by pulling their tails. Rabbits can be safe in crouched position. Foxes can only tag one rabbit per round.

At the end, a fox who didn't catch a rabbit or rabbits who didn't tig a leaf 'die' and become a leaf.

Leaves who were tiggged become rabbits and rabbit who got eaten become foxes.

Food web game

Inside and outside

CofE: SCN 1-02a, SCN 2-02a, HWB 1-28a HWB 1-04a / HWB 2-04a HWB 2-34a

Resources: ball of string and picture resources

Everyone is given a food web animal card and stands in a group. Hand a piece of string to the student with a top predator card such as a peregrine. *What does this bird eat?* They pass the string onto another student with for example a smaller bird card. *What does this bird eat?* And so on, linking up the animals into a web. Reverse questions every so often. *What eats the butterfly?* Once everyone is linked up, investigate: What happens when the web is 'disturbed'? Disturbing factor could be habitat destruction by building, natural disaster or as simple as stepping on a bug. If you feel your string tugged then you sit down. Pick one student to sit down. The animals attached should feel a tugging and sit down, and so on until the whole web has collapsed!

Reflection

What happened when we removed the bug? What would happen to humans if the food web collapsed like this?

All species, including humans, depend on one another and on the environment they are in to survive. *What happens if we remove one animal from the food chain vs a food web? Resilience is the capacity to recover quickly from difficulties or disasters. How resilient is an animal that eats lots of different animals, vs an animal that only eats one type of animal?*

Extension: Pass the energy

Everyone remains as their animal and gets into a circle. One person starts and passes the clap to the left. Keep going in a circle, speeding up. Add in different moves, such as change direction, or eat an animal across the circle.

Reflection: *Energy exists and transfers in different forms, but still flows between plants and animals including humans. All organisms on the planet are interrelated at local and global scales.*

Forth River crossing game

Inside and outside

SCN 1-14a, SCN 2-14b

Resources: none

If my _____ is inherited, I can cross the Forth River. Is my beak, feet, the colour of my belly inherited? Yes. Is the size of my belly inherited? No. This affected by the availability of food. Is migration inherited and nest building inherited? Yes. Is recognising predators inherited? No, young birds learn by observing behaviour of other birds.

Survival Says – inheritance game

Inside and outside

We inherit traits that aid our survival for example feather colour helps camouflage and our beak and feet size and shape help acquire food. Traits that need to change depending on what our surroundings are e.g. weight might depend on food availability and learnt bird calls may change slightly depending on location.

Decide actions before game. If ‘survival says my beak is inherited’, students act out building nests or touching their beak. If ‘my weight is inherited’, survival didn’t say that and we don’t act out mobbing or touching their belly.

Inherited: size and shape of birds feet and beak. Colour of feathers. Building nests. Migration.

Not inherited: weight. Recognizing predators. Bird calls. Mobbing.

Amazing murmuration

Inside and outside

<https://www.youtube.com/watch?v=eakKfY5aHmY>

Starlings fly in unison. One person is it and everyone else runs. The single starling decides to fly in unison so catches another starling. They join holding hands or locking elbows in a chain, and try to catch more starlings until everyone joins in a chain.

<https://www.youtube.com/watch?v=vkODaBitPPM>

This can also be adapted for ‘mobbing’ as a form of learned behaviour, one blue jay knows how to ‘mob’ the predator, so teachers (joins together with) another blue jay until all birds are united.

Migraiton route

Inside and outside

Resources: blindfolds

In pairs, one student leads a blindfolded student from one spot to another e.g. to a tree. The blindfolded student has to explain the route, or guess where they are, at the end before taking off the blindfold.

Rainbow

Inside and outside

Resources: a bunch of keys

Students sit in a circle and are named red, yellow, green or blue. The keys are set in the centre of the circle. One group is called and students run clockwise round the circle, back to their space to get the keys. The person who gets the keys calls another colour. This same person can also say 'rainbow!' while one group is running. That group then need to run anti-clockwise to get keys.

Stealthy predators

Inside and outside

Resources: a bunch of keys

One student is blindfolded in the centre of a circle, with keys at their feet (prey). Other student's in the circle try and get keys very quietly one at a time in random order. If student in the centre hears movement, they point to noise source. If they point correctly, the predator goes back into the circle and the next person goes.

John Muir says....

Inside and outside

Resources: a bunch of keys

One student is blindfolded in the centre of a circle, with keys at their feet (prey). Other student's in the circle try and get keys very quietly one at a time in random order. If student in the centre hears movement, they point to noise source. If they point correctly, the predator goes back into the circle and the next person goes.

John Muir's epic adventure

Inside and outside

John Muir walked 1000 miles from Indianapolis to The Gulf of Mexico, writing and drawing his experience in a book that later became a book called a thousand mile walk to the gulf of Mexico. On the inside of the notebook it said "John Muir, Earth-planet, Universe."

Shall we do the same? Walk one thousand steps, stopping every 100 steps to write about your experience. Write thoughts, feelings, sensations or what you see, hear and feel in your immediate surroundings.

This can be anywhere. "Even a gravel path beside a car park holds an infinity of textures and responses. When places become dull we have to make them fascinating again. As writers, we should aim to invest our town or city with the same exoticness that someone who has never been there before would give it..." – (Writing Your Way, p108)

1, 2, 3 TREE!

Inside and outside

Students pick an appropriate tree. One person is it and stands at the tree counting to 20. Everyone else hides in the vicinity (mark out boundaries at the beginning). When 20 seconds are up the student who is it shouts 1, 2, 3 TREE! They have to catch the other students but can 'catch them' just by seeing them and touching the tree saying 1, 2, 3, I see you e.g. Jenny. The hiding students try to get back to touch the tree and say 1, 2, 3, FREE without being seen!

Habitat moves

Inside and outside

Invite students to walk from one end of the class to the other, one by one, acting out how they did or would walk through the habitat. *What shoes would you wear if any? Was it difficult to walk through it? Did you sit for a while or walk quickly? Were you quiet and relaxed or excited and active?*

Adaptive plants

Inside and outside

Like the game 'granny' one student stands at the opposite side of the room / outdoor space than the rest of the class. When their back is turned to the rest of the class, the other students can run towards the single student. The single student turns and calls a climate zone (polar, temperate, desert, tropical (KS2 also learn mountain and Mediterranean)) and the class freeze, acting out the plant that is adapted to the particular climate zone. Those caught moving or doing the incorrect plant need to go back to the starting point. Eventually some stealthy student will make it all the way and catch the single student. They are then to stand with their back facing, and repeat.

For example-

Desert – have spikes to stop animals eating their bodies, that are full of water. So students could act 'spikey'

Tropical – long to reach the sun, temperate – sleeping in winter, Mediterranean – strong scent e.g. lavender, polar – huddled up close to the ground, mountain – mat spread on the ground (see climate change worksheet for explanations)

Woodland activities

outside

- Students go for a quiet walk in the area, and pick something they feel attracted to. They then make a mandala together or a self-portrait individually.
- Students find somewhere comfortable to sit and listen. They then come back in and mimic /sing what they heard. One person starts and then next joins in, and this continues in a circle until the whole woodland choir is singing! EXA 2-18a
- Make instruments out of different natural materials of different densities, thickness, length, such as stick chimes or tree stump drums. Compare and discuss why different sounds were made. EXA 1-17a
SCN 1-11a
- Mix wildflower seeds with soil and water, and roll them into a ball. Throw your seed bombs!
You can get some free seeds here <https://www.justbeedrinks.co.uk/seeds/> or keep an eye on Grow Wild UK <https://www.growwilduk.com/content/about-grow-wild-seed-packets>
- (Poe-e- tree) To students: In groups find your favourite tree and watch it for a while. How does it move, balance? How does the tree look, smell, feel? How do you feel around it? Write one line each. Come together with the lines to make a whole poem.
- Ramp up your identification skills by making a sweep net to catch bugs in long grass http://ww2.rspb.org.uk/Images/sweep_net_tcm9-405022.pdf or an animal tracker for night time wanderers <https://www.rspb.org.uk/globalassets/downloads/kids--schools/teaching-resources/make-an-animal-tracker.pdf>

Bioaccumulation demonstration

Inside or Outside

resources: green playdough

CofE: SCN 1-02a, SCN 2-02a, HWB 1-28a, HWB 1-04a, HWB 2-04a

Pollution builds up, increasing in amount as you move up the food chain. This is because animals higher up the food chain (e.g. carnivores) eat more of the animals in the level below (herbivores).



Students order themselves into a pyramid. Bottom row (plants) take in the pollution (green playdough) this is then passed to the next row (herbivores) and the next (carnivores) until the top row (top predator) has all the pollution and falls to the ground!

Index of CofE Es & Os for each lesson

Numeracy / Mathematics

Lesson 1	MTH 2-17d MTH 1-21a MTH 2-21a	Lesson 8	MTH 1-17a MNU 2-10c MTH 2-17c
		Lesson 9	MNU 2-07a MTH 2-15a

Expressive Arts

Lesson 1	EXA 1-04a EXA 2-04a	Lesson 5	EXA 1-01a, 1-09a, 1-16a, 1-17a, 1-18a EXA 2-01a, 2-09a 2-16a, 2-17a, 2-18a
Lesson 2	EXA 1-12a EXA 2-12a EXA 1-04a EXA 2-04a	Lesson 11	EXA 1-01a EXA 1-12a EXA 2-01a EXA 2-12a EXA 2-14a
Lesson 4	EXA 1-01a / EXA 2-01a EXA 1-09a / EXA 2-09a EXA 1-14a / EXA 2-14a	Games	Weather and climate game, woodland activities

Health and Wellbeing

Lesson 3	HWB 1-01a / HWB 2-01a HWB 1-08a / HWB 2-08a	Lesson 9	HWB 1-28a HWB 1-04a / HWB 2-04a
Lesson 7	HWB 1-24a HWB 2-24a	Games	All (include a level of physical movement and fun)
Lesson 8	HWB 1-01a / HWB 2-01a HWB 1-08a / HWB 2-08a		

Literacy / English

Lesson 2	LIT 2-14a LIT 1-14a LIT 1-02a LIT 2-02a	Lesson 8	LIT 1-20a LIT 1-22a LIT 2-20a LIT 2-22a
Lesson 3	ENG 1-30a, ENG 2-30a LIT 1-07a LIT 2-07a LIT 1-23a LIT 2-23a	Lesson 10	LIT 1-05a LIT 2-05a
Lesson 4	LIT 2-20a	Lesson 11	LIT 1-04a LIT 2-04a LIT 1-07a LIT 2-07a
		Lesson 14	LIT 2-08a
		Field Trip	John Muir's woodland walk

Sciences

Lesson 4	SCN 0-15a SCN 1-01a SCN 2-01a	Lesson 9	SCN 1-02a SCN 2-02a
Lesson 5	SCN 1-11a SCN 2-11a	Lesson 10	SCN 2-01a
Lesson 6	SCN 2-01a SCN 1-14a SCN 2-14b	Lesson 12	SCN 1-03a SCN 1-02a SCN 2-02b
Lesson 7	SCN 2-01a SCN 2-14a	Lesson 13	SCN 2-03a SCN 2-18a
Lesson 8	SCN 1-14a SCN 2-01a	Games	Animal pairs, bird song, wren and crow, food chain, fox-rabbit-leaf, food web, Forth River crossing, woodland instruments, bioaccumulation demonstration

Social Sciences

Lesson 1	SOC 1-14a SOC 2-13a SOC 2-14a	Lesson 12	SOC 1-12b SOC 2-12a SOC 1-07a SOC 2-07b SOC 2-08a SOC 2-08b SOC 2-12a SOC 1-12b SOC 1-16a SOC 1-08a SOC 2-08a
Lesson 2	SOC 1-14a	Lesson 14	SOC 1-08 SOC 1-13a SOC 1-16a SOC 2-08b SOC 2-15a SOC 2-16a SOC 2-17a
Lesson 3	SSOC 1-07a SOC 2-07a	Lesson 15	SOC 1-08a SOC 2-08a SOC 2-19a
Lesson 4	SOC 2-14a	Games	Weather and climate, ollie the oyster catcher
Lesson 10	SOC 1-08a SOC 2-08a SOC 2-03a SOC 1-07a SOC 2-07a SOC 1-14a SOC 2-14a SOC 1-06a SOC 2-06a		
Lesson 11	SOC 1-02a SOC 1-13a SOC 2-02a SOC 1-04a SOC 2-04a SOC 1-03a SOC 2-03a SOC 2-06a		

Technologies

Lesson 7	TCH 1-09a TCH 1-10a TCH 2-09a TCH 2-10a	Lesson 13	TCH 1-02a TCH 1-02a TCH 2-02b TCH 2-02a
		Lesson 15	TCH 1-02a TCH 2-02a