eco detectives

WORKBOOK FOR

JUNIOR & SENIOR INFANTS

ENVIRONMENTAL & CLIMATE CHANGE
INVESTIGATIONS FOR PRIMARY SCHOOLS

RESOURCE CARDS

These Resource Cards are available in the Eco-Detectives Education Pack for use where indicated in this workbook, or for any associated class use.

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26. Enquiry Planning for Students
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All materials in the ECO-Detectives Pack, including digitised Interactive Investigations, Workbooks and Resource Cards, are also available on the CD-ROM attached to the pack or online on the Primary Schools section of **www.enfo.ie**.

Change.ie and **Changeblog.ie** are part of the National Climate Change Awareness Campaign administered by the Department of the Environment, Heritage and Local Government.

Design: Roomthree Design

introduction

The enquiries and activities in this workbook are appealing to young children who, at this age, love to explore and learn new things. They are developing a sense of place and space and are developing emotionally and imaginatively through language.

Make the children feel as if they are real **eco-detectives** by exploring school grounds, where learning about butterflies and examining minibeasts become simple ways of introducing themes of the environment and biodiversity to younger ages.

Encourage the children to describe everything they see through speech and drawing. It is best to take the children outside when the weather is dry – it makes the whole experience much more pleasant for everybody.

The children can draw pictures of what they see and find; these pictures can then be displayed in the classroom or around the school for all to enjoy!

contents

useful websites

- www.change.ie
- www.enfo.ie
- www.epa.ie
- www.noticenature.ie
- www.greenschoolsireland.org
- www.changeblog.ie
  register here to receive a monthly environment eZine

key enquiry question

What makes a good environment?

key focus

Interacting with the local environment

key questions

1. What is an environment?
2. What is in our environment?
3. What do we think of our environment?
4. What is a butterfly?
5. What happens in a butterfly's life?
6. What animals are in our environment?
7. Where are they?
8. Where would a butterfly like to live?
9. Where would a butterfly like to live in our school grounds?
10. How can we encourage butterflies in our school grounds?

concepts

- Location
- Natural and human environments
- Environmental awareness and care

skills

- Investigation / Enquiry
- Observation
- Sorting and sequencing
- Drawing places
- Expressing opinions
- Working as a group
- Sharing opinions

resources

ESSENTIAL

- School grounds
- Paper
- Yoghurt pots
- Scissors

OPTIONAL

- Funnels
- Photographs of school grounds
- Resource Cards

WEBSITES

- ww.noticenature.ie
- www.enfo.ie
- www.change.ie

curriculum overview

Geography

- A sense of place and space
- Geographical investigation skills
- Maps, globes and graphical skills
- Human environments: Living in the local community
- Natural environments: The human natural environment

Science

- Working scientifically
- Living things: Myself; Plants and Animals
- Environmental awareness and care: Caring for my locality

SPHE

- Myself and others
- Myself and the wider world: Developing citizenship

English

- Receptiveness to language
- Developing cognitive abilities through language
- Emotional imaginative development through language

learning activities

- Observing the local environment by drawing and discussing the environment in the school grounds.
- Reading and talking about '*The Very Hungry Caterpillar*', by Eric Carle.
- Sequencing the life-cycle of a butterfly through group activities.
- Investigating, through fieldwork, types of habitats for minibeasts in school grounds.
- Discussing and classifying minibeasts using living creatures.
- Describing minibeasts and their habitats through talking and drawing.
- Recognising and discussing different types of environments.
- Investigating where butterflies would like to live in the school grounds through fieldwork.
- Discussing, ranking and drawing different types of environments for butterflies.
- Designing and making a butterfly environment.

EXTRA ACTIVITIES:

- Designing and making minibeasts with clay / marla
- Researching lives of other minibeasts using library / internet

ENQUIRY 01

our local environment

key questions

- What is an environment?
- What is in our environment?
- What do we think of the environment?

outline

Children observe and discuss the local environment. The use of the school grounds is essential for this activity. Use of own photos, or a selection of images from Resource Cards 1-26 listed in the front of this workbook might prove useful here. The children note the places they like and do not like.

preparation

This activity works best on a day when the children can spend some quality time outside.

learning outcomes

On completing these activities all children will be able to:

- observe their locality (school grounds); and
- record their observations through maps and pictures.

resources

- School grounds
- Clipboards, paper and pencils

learning activities

1. Children go outside in pairs or in groups with teacher and observe and talk about what they can see. Children can talk about what is important to them. Teachers could encourage children to observe school, work places, play places.
2. Children draw one place they like and one place they do not like in their local environment. Children could respond in other ways such as talking or making models.
3. Children return to classroom and discuss places they have drawn in pairs; they then do the same with the rest of the class.

NOTES

- The children are covering key aspects of the geography, SPHE and science curriculum by using their locality. They are also developing their oral language and communications skills.
- Some children may also note that some features in their environment are made by people and others are not, as described in the geography curriculum.
- Teachers may like the children to lead the fieldwork, by asking for suggestions of where to go. Responses of children to each other's work could have a geographical and / or art focus.

butterflies and their environments

key questions

- What is a butterfly?
- What happens in a butterfly's life?

outline

Investigate butterfly life-cycles and habitats with the children and discuss how they can be affected by outside factors.

preparation

Source a copy of '*The Very Hungry Caterpillar*', by Eric Carle or similar book.

learning outcomes

On completing these activities all children will be able to:

- describe a caterpillar, egg, chrysalis (pupa) and butterfly;
- recall some foods that caterpillars eat; and
- describe the life-cycle of a butterfly.

resources

- 'The Very Hungry Caterpillar', by Eric Carle, (available in English and Irish from booksellers ISBN: English 0-399-22690-7; Irish 9789999323376)
- Resource sheet: Stages of the life-cycle of a butterfly (Investigation 02) - to be photocopied and cut into four pieces with a scissors.
- Interactive 'Life-Cycle of the Butterfly' feature included in this pack's CD-ROM (also found on www.enfo.ie)

learning activities

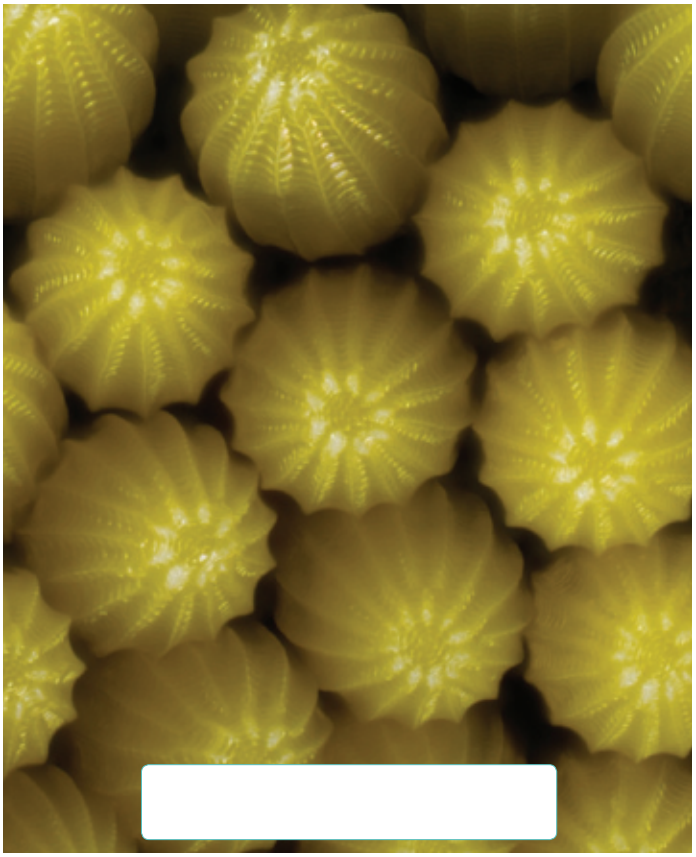
1. Read the '*The Very Hungry Caterpillar*' to the class. Discuss the stages of the life-cycle of a butterfly.
2. Complete the sorting activity using resource sheet: Stages of the life-cycle of a butterfly (Investigation 02).
   - **Egg** - The mother lays the egg, which is the size of a pinhead on a leaf. They lay the egg on a leaf so it has something to eat when it hatches.
   - **Caterpillar** - Like the Hungry Caterpillar, caterpillars eat large amounts of food, relative to their size, to keep growing (lasts for between 12-14 days).
   - **Chrysalis (pupa)** – The caterpillar grows a chrysalis (pupa) to protect itself as it changes. At this stage it is known as a pupa. The chrysalis (pupa) is usually attached to a twig (this stage usually lasts for about a week).
   - **Butterfly** - Comes out of the chrysalis (pupa). Takes about 2 hours before it can fly.
3. Children, in pairs, talk about the stages of the butterfly's life.

NOTES

- Depending on the time of year, teachers could use fieldwork again to find butterflies in the school grounds.
- There are many good animations of butterflies' lives online, especially on YouTube, which could be used following the card sort activity, as reinforcement.
- There are various packs, toys, etc. supplementing the Eric Carle book available in toyshops.

stages of the life-cycle of a butterfly

INSTRUCTIONS: Stages of the life-cycle of a butterfly - to be photocopied and cut into four pieces with scissors. Children can then name the stage of development and place them in order. But which comes first - the butterfly or the egg?



animals & their environments

key questions

- What animals are in our environment?
- Where are they?

outline

Children will be given the opportunity to search for minibeasts in the school grounds. This activity focuses on helping children develop the scientific / geographical skills of observing. The children will classify (sort) their animals (or those pictures in Investigation 03a, if a range of animals were not found).

preparation

Collect resources required. Choose an outside area where the children can search for minibeasts. Ensure the area is clean and that litter has been removed.

learning outcomes

On completing these activities all children will be able to:

- collect minibeasts and make close observations, recording their observations using detailed drawings / maps; and
- classify animals into groups and develop lists of characteristics for each group.

resources

- Dessert Spoons / Teaspoons / Small trowel
- Collection box with lid (e.g. plastic lunchbox, take away containers)
- Magnifiers / Bug viewers (optional)
- Multiple copies of picture / photo cards in envelopes (Investigation 03a)
- Minibeast Hunt worksheet (Investigation 03b)

learning activities

1. Give each pair/ group a large and a small spoon and a collection box with lid. Let the children search for minibeasts in the soil, leaf litter and under rocks or fallen branches.
2. The children bring the minibeasts into the classroom. The children observe one minibeast at a time, using the following types of questions:
   - **Where was it found:** Was it light or dark? Dry or wet? In the open or underneath something else?
   - **Look at its head and body:** What do you see? Is it hard or soft / big or small? Does it have legs? Does it have wings? How many?
   - **Look at how it moves:** Does it move all the time? Does it move quickly or slowly? Does it leave a trail?
3. Encourage the children to make a drawing of the minibeast they are observing and where they found it, using the Minibeast Hunt page (Investigation 03b). Each group can then discuss their observations in pairs / with the whole class.
4. Give each group a set of picture cards (Investigation 03a) and afford them a few minutes to look at the different pictures. Encourage the children to discuss the characteristics of each of the picture cards – by asking the same types of questions as above.
5. Each group then sorts the cards into two, three and four groups (or more) in turn. Encourage the children to name their groups each time, e.g. flying group, hairy group, etc. The children could then paste the pictures onto larger sheets of paper.

NOTES

- In classifying and then justifying their actions the children are working as scientists.
- It is important to try to avoid telling the children the names of the minibeasts immediately. Let them observe the minibeasts first, and then perhaps later tell them the names.
- The children should be encouraged to return the minibeasts to their natural environment. They should wash their hands, and the surfaces on which they were observing the minibeasts should be cleaned thoroughly.

minibeast identification card

INSTRUCTIONS: Separate class into groups. Copy and cut-out images below, allowing a full set for each group. Further minibeast images can be added if desired. The groups of eco-detectives can then name and examine the minibeasts carefully and classify into groups as indicated in learning activities 4 and 5 on page 8.

minibeast hunt

name:

class:

INSTRUCTIONS: Using your detective powers examine your captured minibeast and draw the legs, shell and wings (if any) and show its colours in the box provided.

What does it look like?

Body or Shell

Legs

Wings

Colours

Where was it?

Under a log?	In the grass?	Under a stone?	In a tree?	In the air?

favourite environments in our school

key questions

- Where do butterflies like to live?
- Where would a butterfly like to live in our school grounds?
- How can we make our school a good place for butterflies?

outline

In these activities, children consider the best environment for butterflies by taking part in a decision-making exercise on where a butterfly would like to live.

preparation

Try to source a large scale map of the school grounds. These are very useful resources for many geography activities. They can be purchased from the OSI or local councils. If this is not possible a hand-drawn map of the school would also work well.

learning outcomes

On completing these activities all children will be able to:

- observe, discuss and appreciate the attributes of the local environment, specifically animals' habitats;
- develop an appreciation that people share the environment with plant and animal life;
- develop a sense of responsibility for taking care of and enhancing the environment; and
- describe and discuss observations, especially in relation to different locations, using an expanding vocabulary and using pictures.

resources

- Photographs of habitats e.g. city, park, woods, etc, can be sourced from the internet and magazines; alternatively look at photos on Investigation 04a – 'What would a butterfly like?'
- School grounds & clipboards (optional)
- 'Where would a butterfly like to live in our school grounds'? worksheet (Investigation 04b)

learning activities

1. Each stage of the lifecycle requires a specific habitat. Introduce the idea of habitats as places where animals/plants/humans live. Ask children to describe their personal habitats.
2. Ask the children to match the animals to their habitats, e.g. house – human, nest – bird, etc. Ask the children to explain why each animal lives in the place they do.
3. As a class ask children to stand up and classify their photographs of habitats into two categories: those that butterflies would like (woodland, park, trees, etc) and those that they wouldn't (factory, city, kitchen, etc).
4. Hand out copies of Investigation 4a - and get the children to indicate by ✓ or ✗ whether a butterfly would like to live in these locations.
5. Hand out the 'Where would a butterfly like to live in our school grounds?' Investigation sheet (Activity 04b) and check the school grounds for areas that would suit butterflies. Complete the investigation sheet by using ticks.
6. On a map of the school, mark where the best site for butterflies would be.
7. Talk about why certain places are good for butterflies. Link this to good and bad environments for other animals.
8. Talk about favourite places for the children. Ask the children to draw their own favourite environment.

NOTES

Butterflies have certain requirements for each part of their life-cycle. To encourage butterflies it is also necessary to encourage caterpillars. The following are features which attract butterflies:

- Butterflies are attracted to red, orange, yellow and pink blossoms in clusters.
- Butterflies also like plants including carrots, parsley, broccoli, cabbage and sunflowers.
- Butterflies like stones for sunbathing.
- Butterfly houses allow butterflies to nest and are designed to keeps birds and other predators out.

OTHER ACTIVITIES

Design an area of the school grounds to be 'butterfly friendly', incorporating the features outlined above.

what would a butterfly like?

name:

class:

INSTRUCTIONS: Have a look at the images below and either give a ✓ if you think a butterfly will like it, or an ✗ if you think it will not like it.

where would a butterfly like to live in our school grounds?

name:

class:

INSTRUCTIONS: Investigate your school grounds for areas that might suit butterflies. When you've chosen 4 places, ask whether it is sunny, quiet or clean - are there any flowers around? Tick the box if it is sunny, quiet, clean, or has many flowers there.

	Location 1	Location 2	Location 3	Location 4
sunny				
quiet				
clean				
flowers				

eco detectives game

START

1

2 you walk to school - march forward 5 spaces!

3

4

5

6

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15

16 you buy a bag of individually wrapped sweets skip a turn to dispose the of wrappers

17

18

19

20 you forgot to turn out the lights last month - the electric bill is huge! go back 3 spaces

21

22

23

24 mum buys you a new bike - race forward 3 spaces

25

26 the school has a new garden. forward 2 spaces

27

28 your school joins green schools - forward 4 spaces

29

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41 a bunch of neighbours get together to make a vegetable garden. forward 2 spaces

42

43

44

45 your neighbours get some solar panels and tell your parents - forward 3 spaces

46

47 your house is too warm, go back 3 spaces to reset the thermostat

48

49 dad offers to carpool with the neighbours on rainy days - forward 2 spaces

50

51

be an eco-detective!

A game for 2 or more players. Race your friends around the board today and find out all about the good and bad things you, your family and your community can do to help the environment and combat climate change.

you will need:

1 Dice
1 counter per player

instructions:

1. Everyone rolls a dice - highest number plays first to begin the game.
2. First player rolls a dice and moves forward that number of spaces. If that player lands on a special square, they must do whatever it says in that square.
3. The next player throws the dice.
4. To win, a player must reach the finishing line first, throwing the exact mumber to win the game.
5. Good luck!

What have you learned from playing the game?

1. What actions were bad?
2. What actions were good?
3. What else would be bad?
4. What good actions could you do?

Design: Roomthree Design

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Centre for Human Rights and Citizenship Education
St Patrick's College Drumcondra

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