INVERTEBRATES

This unit is for children of third Cycle of Primary Education.

Through it children will learn about invertebrate animals, their characteristics, main groups and how to identify and classify them. The experimental work focuses on collecting, observing, identifying, classifying and describing Minibeasts

The material designed is for 10 teaching hours and it is divided into 5 lessons.

1. What's an invertebrate? ……2
2. Identifying Invertebrates……..5
3. Invertebrates' Groups……..14
4. Invertebrates' Processes of Life……23
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Each lesson includes the CLIL lesson plan, Teachers' Notes, Activities and Resources.

There are also Teachers' Notes about the assessment and a Self-Assessment Booklet……..…54

CLIL Lesson Plan 1: **What's an invertebrate?**

Aims

- To introduce what an invertebrate is.
- To classify animals into vertebrate and invertebrates.

Objectives

Teaching Objectives	Learning Outcomes The children will be able to
A. Content	A. Content
• Elicit previous knowledge related to animal classification in vertebrates and invertebrates. • Awaken children's interest in knowing the characteristics of invertebrate animals. • Show and comment on the unit content outline.	• Recognise vertebrate and invertebrate animals. • Define what vertebrate and invertebrate animals are. • Memorise key definitions and vocabulary.
B. Cognition	B. Cognition
• Understand concepts and apply them. • Make choices about animals • Justify decision-making by giving reasons.	• Memorise definitions and apply them • Transfer key language • Classify animals into vertebrates and invertebrates. • Understand classification.
C. Communication	
C.1 Language **of** learning	
Key phrases needed: How many…? Why…? Which ones…? It belongs to…. It is/has … They are/ have… Because… Key vocabulary: animal, plant, vertebrate, invertebrate, backbone, ant, rose, coral, snake, anemone, fish, grass, cat, bee, elephant, ladybird, frog, scorpion, shellfish,	
C.2 Language **for** learning	
How to define/justify Learning how to learn: the language for pair group Understanding instructions How to deal with lack of understanding	
C.3 language **through** learning	
Use of dictionaries for vocabulary extension	

Teachers' Notes	INVERTEBRATE ANIMALS

Lesson 1 **WHAT'S AN INVERTEBRATE?**

Introduction

Begin displaying **slide 1 of " Invertebrates" Power Point**. Ask them to observe the photos and to answer the questions

How many animals can you see?
Why are they animals? If it is necessary, remind them of the properties of living things and the differences between plants and animals.
Which ones are vertebrates? If it is necessary, remind them what vertebrate means.
Which group of vertebrates do they belong to? Mammals, Fish, Birds, reptiles or amphibians? Review the main features of each group.
What do you think the other animals are?

Refer to previous wall-charts / mind-maps

Point out that corals and sea anemones are also animals.

Activities

Establish what an invertebrate is showing the definition on **slide 1 of " Invertebrates" Power Point**. Then ask them if they know the following information, showing the corresponding information afterwards.

Where they can be found.
How big they are.
How many different species there are.
Which percentage of all animals they represent.
If they are important for us to survive.

Hand out copies of **Activity Sheet 1" What's an invertebrate?"** Reviewing the names of the animals shown, ask them to sort them into two groups and label the groups. Then in pairs they will complete the sentences of exercise 2 in pairs.
Check the answers.

Next ask children to recall all that they learnt about invertebrates.

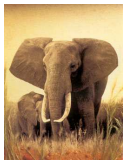
Then show **slide 3 of " Invertebrates" Power Point** and explain to them what they are going to learn during the unit.

Activity Sheet 1	INVERTEBRATE ANIMALS

WHAT IS AN INVERTEBRATE?

1.Sort these animals into two groups.

Label the groups.







……..	……..
……..	……..
……..	……..
……..	……..

2. Complete

- Animals can be divided into…….. and……..
- …….. have a …….. but ……..don't have …… ……..
- ……., ……..and …….. are vertebrates because they ……. a ……
- ……., ……., …… and …….. are…….. because they …….. ……. …… ……

Elephants ladybirds millipedes frogs sharks scorpions shellfish

backbone vertebrates invertebrates

CLIL Lesson Plan 2: **Identifying Invertebrates.**

Aims

- To sort invertebrates into groups according to their appearance
- To identify invertebrates using a key database.

Objectives

Teaching Objectives	Learning Outcomes Children will be able to
A. Content	A. Content
. • The variety of invertebrate species. • Essential features of their appearance. • What a key database is. .	• Describe similarities and differences between invertebrates. • Describe a Key database.
B. Cognition	B. Cognition
• Make observation of different invertebrates. • Identify invertebrates' visible features. • Compare pairs of invertebrates. • Identify invertebrates by using a key database. • Make a Key database.	• Transfer key language • Classify invertebrates using different criteria • Recognise similarities and differences between pairs of invertebrates. • Identify a range of invertebrates by using a key database. • Observe a range of invertebrates and make a key database.
C. Communication	
C.1 Language **of** learning	
Key phrases needed: Has it got…? How many…? Does the shell covers…? Does it lives…? Yes, it does. /No it doesn't It is/has … It isn't / has no… They are/ have… They hasn't/ have no … …….. but……. Both are/have… A pair of… More than… Key vocabulary: invertebrate, backbone, leg, wing, segmented, body, shell, butterfly, ant, spider, crab, centipede, millipede, worm, shellfish, snail, octopus, tick, fly, woodlouse, ladybird, snail.	

C.2 Language **for** learning
How to describe Learning how to learn: the language for pair group Understanding instructions How to deal with not understanding
C.3 language **through** learning
Dictionary use for vocabulary extension Describing differences and similarities.

D. Culture	D. Culture: pupils will demonstrate:
Curiosity about invertebrates' appearance. Respect for the principles of turn-taking. Interest in helping other children.	Raised curiosity about invertebrates Respect and desire to help when working in pairs.

Teachers' notes	INVERTEBRATE ANIMALS
Lesson 2	**IDENTIFYING INVERTEBRATES**

Introduction

Ask the children to describe what an invertebrate is, and whether all the invertebrates look alike.

Activities

- Organize children in pairs. Provide each pair with a copy of **Resource Sheet 1 " Describing invertebrates"**. Hand out to them copies of **Activity Sheet 2 " Similar and different"** Direct the children's attention to photographs A and B. Ask them to either suggest similarities between the two animals' appearance or the way they move. e.g. both are animals, they are invertebrates, they are small…
  Ask the children to record these observations briefly in the box provided. Then turn their attention to some of the differences between the two animals, e*.g. the ladybird has legs; the worm has no legs; The ladybird flies, the worm doesn't.*
  Once they have finished it, direct their attention to the second set of pictures. Ask the children once more to list similarities and differences.

- Give each pair a laminated copy of **Resource Sheet 2 " Invertebrates' cards"**. Ask them to cut it out and lay out all the cards and then to discuss them and sort them into group of their choice. Once they have sorted them in one way, encourage them to sort them in a different way by using an alternative criterion.
  Once all groups have sorted their collection in at least one way, share some of the criteria that have been used, e.g. animals with or without legs;
  Establish that invertebrates can be sorted in different ways. And that scientists use keys to identify organisms, and a key is based on looking for similarities and differences between organisms.

- Explain that a Key is a series of questions, each with two possible answers. The answers lead you to the next question or will identify the unknown creature.
  Display **Resource Sheet 3 "Invertebrates' Key**" with the OHP and show children how to use it identifying invertebrates' card A.
  Point out one creature at a time. Start at the first question and just follow the line of the answer.

  Provide each pair with a copy of Resource Sheet 3 "Classification Key" and ask them to use it to identify invertebrates' cards b, c, e, g, h, I, j, k, and m. and write the name of the animal on the card with a washable pen.
  Once children have identified all the animals check the answers.

- Hand out copies of **Activity Sheet 3 " Identifying invertebrates".** Ask children to identify the invertebrates, individually. Then check their answers with the children sat next to them.

- Organize children in pairs. Hand out to children copies of **Activity Sheet 4 " Drawing a key".** Ask them to observe carefully the animals and draw a key to identify them.
  Once they have drawn the key, ask them to exchange their keys and try if they work.

- To consolidate how to use a key, children, in pairs, can play a guessing game. Ask them to follow the steps bellow:

    - Place the invertebrates' photo cards a, b, c, e, g, h, j, k, and m face down.
    - Child A takes a card, look at it hiding it.
    - Child B asks questions, following the Invertebrates' key to guess which animal it is.
    - Repeat the steps, but now it is B who starts.

Resource Sheet 1	INVERTEBRATE ANIMALS

DESCRIBING INVERTEBRATES

		Size /shape	Colour	Body	Number	Body parts
It	**Is** **Isn't**	**Big** **Small** **Tiny** **Long** **Short** **Round**	**Black** **White** **Blue** **Red** **Green** **Yellow** **Brown** **Orange**	**Soft** **Hard**		
	Has got **Hasn't got**				**One** **Two** **Three** **Four** **Five** **Six** **Seven** **Eight** **Ten** **Twenty**	**Head** **Mouth** **Eyes** **Antennae** **Legs** **Wings**

Activity Sheet 2	INVERTEBRATE ANIMALS

SIMILAR AND DIFFERENT

1. Observe the animals bellow.
2. Record the similarities and differences.

Earthworm

Ladybird

Similarities	Differences

Fly

Spider

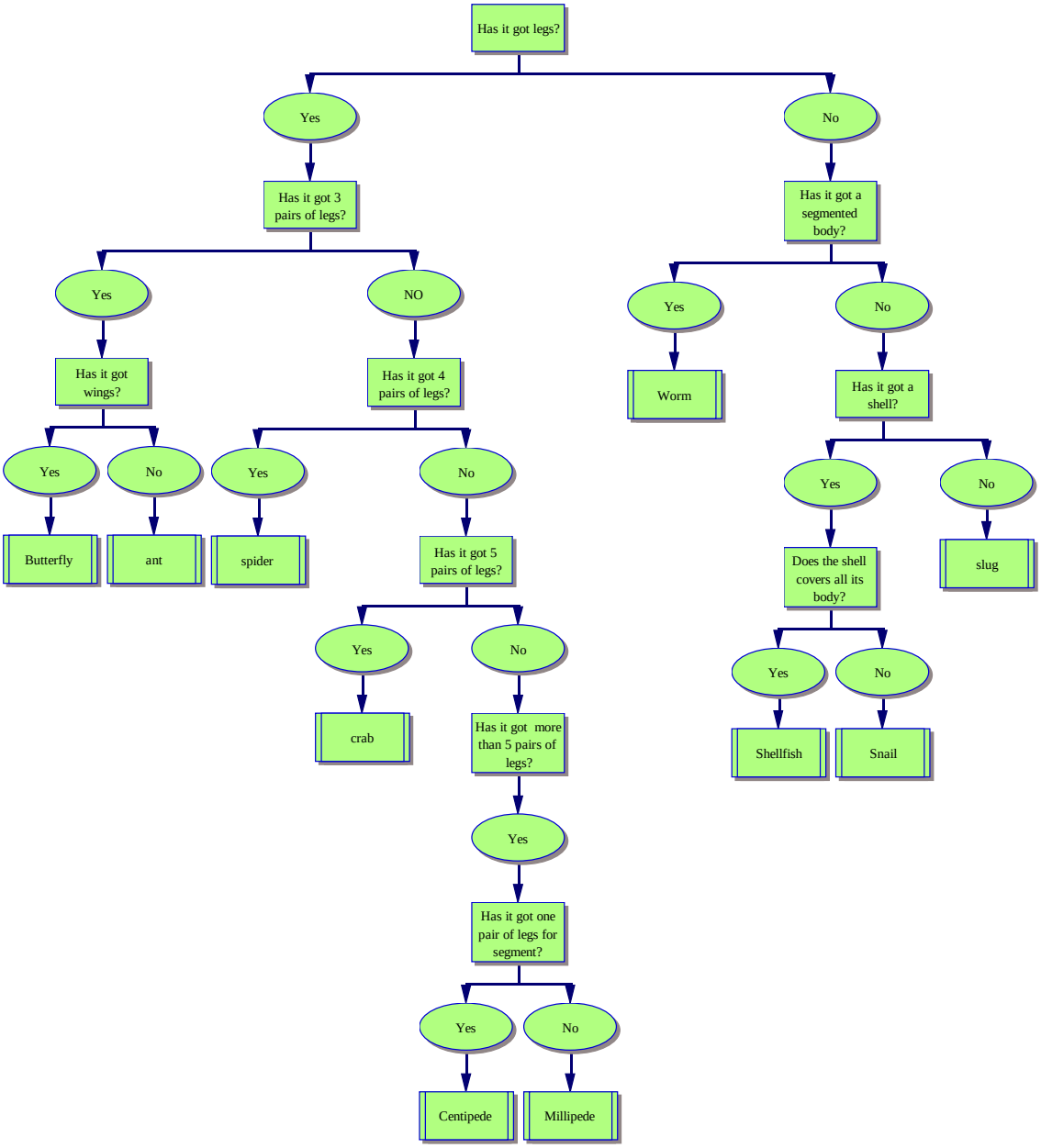
Similarities	Differences

Resource Sheet 2	INVERTEBRATE ANIMALS

			
a)	b)	c)	d)
			
e)	f)	g)	h)
			
i)	j)	k)	l)
			
m)	n)	o)	p)

Resource Sheet 2	INVERTEBRATE ANIMALS

IDENTIFICATION KEY

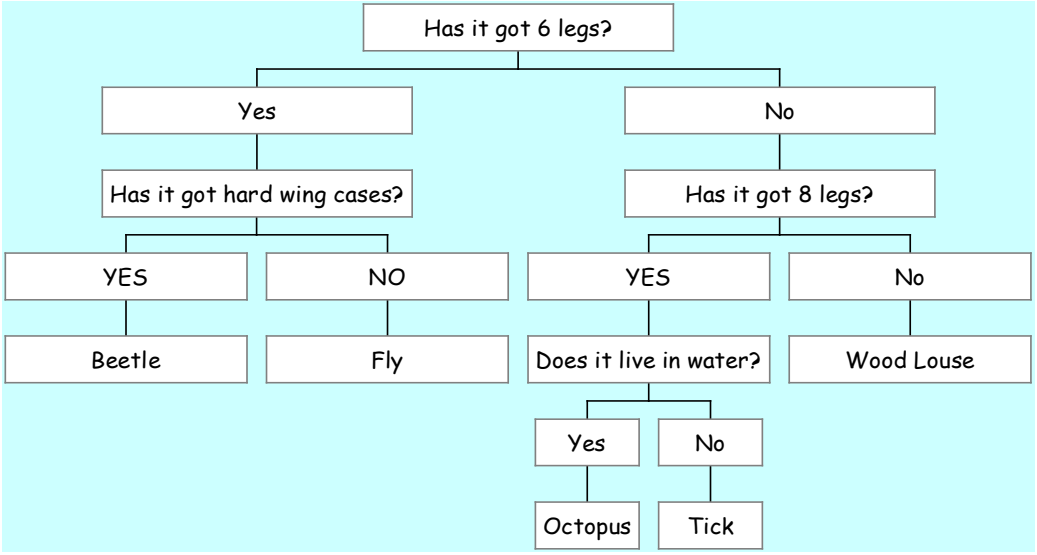


Activity Sheet 3	INVERTEBRATE ANIMALS

IDENTIFYING INVERTEBRATES USING A KEY

1. Identify these invertebrates using the key.

…… …… …… …… ……



Activity Sheet 4	INVERTEBRATE ANIMALS

MAKING A KEY

1. Draw a branched key to identify these invertebrates.

CLIL Lesson Plan 3: **Invertebrates' Groups.**

Aims

- To classify invertebrates into Annelids, Arthropods (insects, spiders, myriapods and crustaceans), Molluscs, Cnidarians and Echinoderms.
- To know the main characteristics of each group of invertebrates.

Objectives

Teaching Objectives	Learning Outcomes Children will be able to
A. Content	A. Content
. • Classification of Invertebrates. • Main characteristics of each group. • Species that belong to each group .	• Name different groups of invertebrates • Describe their characteristics. • Name species that belong to each group. • Memorise Key vocabulary. • Memorise and use key phrases.
B. Cognition	B. Cognition
• Make observation of invertebrates' groups' species. • Identify invertebrates groups' body characteristics. • Make distinction between invertebrates' groups. • Classify invertebrates into the groups. • Justify classifications.	• Transfer key language • Recognise differences among groups of invertebrates. • Classify a range of invertebrates into groups. • Complete a chart about groups of invertebrates. • Understand a justification of a classification pattern.
C. Communication	
C.1 Language **of** learning	
Key phrases needed: Its/ their body is… How many…? It is/has … It isn't / has no… They are/ have… They hasn't/ have no … …….. but……. A pair of… More than… The largest It is attached It includes ….per…. made up of	

Key vocabulary**: invertebrate, arthropods, insects, arachnids, crustaceans, myriapods, crustaceans, molluscs, cnidarians, echinoderms**

NB Some of this extended vocabulary is already known. For new items, it is initially receptive vocabulary – gradually through the unit it becomes active vocabulary and in the final writing/presentation task, depending on their ability, pupils will be able to use actively the words associated with the invertebrates they describe.
Leg, wing, segmented, body, shell, rigid, soft, hard, jointed, thorax, abdomen, head, exoskeleton, cephalothoraxes, organs, simple-bodied, stomach, mouth, surrounded, tentacles, spines, land, water, antenna, compound eyes, dark, damp, sand, rock, ocean,
Earthworm, nereis, ant, fly, bee, centipede, millipede, spider, scorpion, mite, tick, crab, shrimp, woodlouse/woodlice, lobster, snail, slug, shellfish, mussel, squid, octopus, sea anemone, jellyfish, sea urchin, starfish.

C.2 Language **for** learning

How to describe
Learning how to learn: the language for pair group
Understanding instructions
How to deal with not understanding

C.3 language **through** learning

Dictionary use for vocabulary extension
Name other species of invertebrates.

D. Culture	D. Culture pupils will be able to:
Curiosity about invertebrates' Appearance. Respect the principles of turn-taking. Interest in helping other children.	Show a raised curiosity about invertebrates Show respect and desire to help when working in pairs.

Teachers' Notes	INVERTEBRATE ANIMALS

Lesson 3 **INVERTEBRATES' GROUPS**

Introduction

Begin the lesson by reminding children that there are very different species of invertebrates and Scientists have classified them into 5 main groups, according to their appearance. And during this lesson you are going to study the main features of each group.

Activities

- Display **Invertebrates Power point, slide 4,** and tell children that the name of the invertebrates' groups you are going to study. Ask them if they know anything about any of them.
  Follow showing:
  - Slide 5. Explain to children the main features of annelids
  - Slide 6. Define Arthropods, ask children to guess which animals belong to this group then show the answer. Explain them that this group can be divided in 5 subgroups called…….
  - Slide 7. Explain the parts of an insect's body and ask children. *Where is the thorax/ abdomen/ head? Between, at the back…*
  - Slides 8. Before showing the final text asks children *Where do the legs join the body?*
  - Slide 9.Explain to children what a compound eye is. Ask them to tell you the names of insects that they know.

- Hand out copies of **Activity Sheet 5 "The body parts of ants"** to children and ask them to do activity 1 in pairs and not to complete it till they agree with the answer. Then complete activity 2 individually.

- Follow again with the Invertebrates' Power Point.
  - Slide 10. Ask the question *Where do you think they live?*
  - Slide 11. After explaining the differences between millipedes and centipedes, show the images and ask them to say what each one is. *How are they different from insects?*
  - Slide 12. Ask children *Do they have wings? And antennae? Do you know the name of any of them?*
  - Slide 13. Ask children *How are they different from insects? And from myriapods?*
  - Slide 14. Ask children *Do they all live in water? How are they different from insects/myriapods/arachnids?*
  - Slide 15. Ask children *Do they all live in water? How are they different from arthropods/ annelids?*
  - Slide 16. Ask children *Do they have eyes/legs/ antennae?* Point out that tentacles are not legs.
  - Slide 17. Ask children *How are they different from arthropods/ annelids/ molluscs/cnidarians?*

- Organize children in pairs. Hand out a copy of **Activity Sheet 6 "Invertebrates' body characteristics 1"** to child A of each pair and **Activity Sheet 7 "Invertebrates' body characteristics 2"** to child B of each pair. Provide them with **Resource Sheet, 4 " Asking information to complete a chart"** and ask them to complete the chart asking the missing information to their partners. Point out that this chart, when completed, will be a resource needed for the next activity and a summary sheet to help them remember the lesson.

- Once they have completes the chart, provide each pair with a laminated copy of **Resource Sheet 5**." **Named Invertebrates' cards"** and ask them to cut them out and classify them into the different groups of invertebrates.
  Once they have finished ask each group to say which animals they have in one of the groups. Ask the rest of the class whether they a agree o not and why. Follow the same process for the other groups. Leave cnidarians, whom there is no card, for the end and ask them to give examples of animals of this group.

- Divide the class in 7 groups, hand out one of the invertebrates' groups to each one and ask them to make a poster about it for the next lesson to display on the wall.

Activity Sheet 5	INVERTEBRATE ANIMALS

AN INSECT'S BODY

1. Label each definition with the part of the body it corresponds.

Abdomen Antenna Eye Head Leg Thorax

_____ It is the segmented tail area of an insect that contains the heart, reproductive organs and most of the digestive system.

_____ It is a sensory appendage that is attached to the head of adult insects. Antennae are used to the sense of smell and balance. Insects have two antennae.

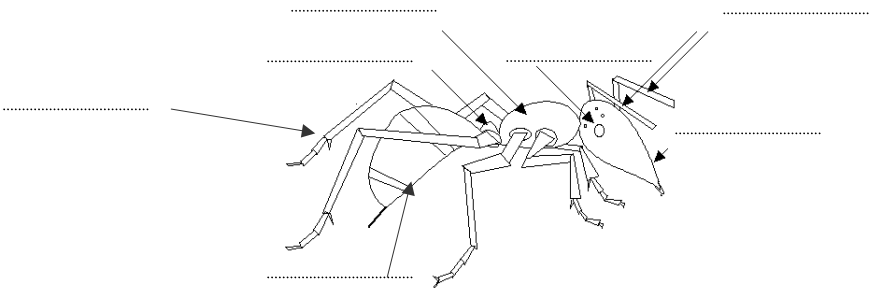
_____ It is compound and is made up of many hexagonal lenses.

_____ It is the part of the insect that contains the brain, two compound eyes. The two antennae are attached to it.

_____ All adult insects have six. They are jointed.

_____ It is the body section between the head and the abdomen. The legs are attached to it.

2. Label body parts of the ant.



Activity Sheet	INVERTEBRATE ANIMALS

BODY CHARACTERISTICS

GROUP	SPECIES	BODY
ANNELIDS	• Nereis •	• • Long •
ARTHROPODS		• • • Jointed legs
Arachnids	• •	• Head • Cephalothorax • 4 pairs of legs
Crustaceans	• Crab •	• • •
	• •	• Lots of segments • 1 or 2 pairs of legs per segment
Insects	• Fly •	• • 3 pairs of legs •
	• •	• Simple • Stomach and mouth •
	• •	• • Hard rigid shell • Central mouth
MOLLUSCS	• Shellfish •	• • •

Activity Sheet 7	INVERTEBRATE ANIMALS

BODY CHARACTERISTICS

GROUP	SPECIES	BODY
	• •	• Round • • Segmented
ARTHROPODS		• Hard • Divided into segments •
	• Scorpion •	• • •
	• •	• Hard exoskeleton • 5 or more pairs of legs • 2 pairs of antennae
Myriapods	• Millipede •	• •
	• •	• Head, thorax, abdomen • • 2 antennae and compound eyes.
CNIDARIANS	• Sea anemones •	• • • Tentacles
ECHINODERMS	• Sea urchin •	• Soft • •
	• •	• Soft • Three continuous parts: head, foot, body. • May have one or two shells

Resource Sheet 4

INVERTEBRATE ANIMALS

ASKING FOR INFORMATION TO COMPLETE A CHART ABOUT INVERTEBRATE GROUPS

Who starts?

Which group has .....?

Which species belong to …….?

How is the body of a/an ……?

Can you repeat it, please?

Can you spell it, please?

You/ me.

It's .....

Yes, of course.

……

Resource Sheet 4 | INVERTEBRATE ANIMALS

ASKING FOR INFORMATION TO COMPLETE A CHART ABOUT INVERTEBRATE GROUPS

Who starts?

Which group has .....?

Which species belong to …….?

How is the body of a/an ……?

Can you repeat it, please?

Can you spell it, please?

Now, it's your turn.

You/ me.

It's .....

Yes, of course.

Resource Sheet 5	INVERTEBRATE ANIMALS

			
CENTIPEDE	MILLIPEDE	BUTTERFLY	BEETLE
			
ANT	CORAL	SNAIL	SHELLFISH
			
SPIDER	SLUG	SCORPION	SHRIMP
			
CRAB	MITE	TICK	OCTOPUS

CLIL Lesson Plan 4:

Invertebrates' Processes of Life

Aim

- To know about the nutrition, respiration, reproduction, sensitivity and movement of invertebrates.

Objectives

Teaching Objectives	Learning Outcomes The children will be able to
A. Content	A. Content
. • Different types of nutrition, respiration, reproduction, sensitivity and movement in invertebrates. .	• Name each type of nutrition, respiration, reproduction, sensitivity and movement in invertebrates • Describe some of these types. • Name some species for each type. • Memorise Key vocabulary. • Memorise and use key phrases. • Memorize honeybee's information.
B. Cognition	B. Cognition
• Understand concepts and apply them. • Make a distinction between each type of nutrition, respiration, and reproduction. • Classify invertebrates based on types of nutrition, and reproduction. • Justify classifications. • Predict, describe and compare. • Make independent research.	• Memorise key phrases and apply them in different ways. • Transfer key language • Describe the life cycle of different insects. • Predict, describe and compare results of nutrition and respiration of 4 invertebrates. • Understand justification.
C. Communication	
C.1 Language **of** learning	
Key phrases needed: …come out… …change into… …break open… … keep out… *NB Some of this extended vocabulary is already known. For new items, it is initially receptive vocabulary – gradually through the unit it becomes active vocabulary and in the final writing/presentation task, depending on their ability, pupils will be able to use actively the words associated with the invertebrates they describe.*	

Key vocabulary: digestive system, nutritive particles, soil, herbivore, carnivore, omnivore, lung, gills, skin, tracheal system, terrestrial, network, tiny, tube, throughout, cell, hole, abdomen, air, sexual, asexual, oviparous, unisexual, hermaphrodite, development, direct, indirect, young, adult, metamorphosis, larva, caterpillar, pupa, nymph, fragmentation, budding, eyesight, sense, touch, taste, smell, tentacles, eye, antennae, tentacles, fly, hop, walk, slither, row, sucker, to lay, to hatch, to emerge, medium, drone, sting, defenceless, fertilize, job, hive, colony, honeybee, female, male, infertile, busy, worker, smallest, repair, intruders, to collect, pollen, water, tree resin, honey, to feed, to build, to raise, to split.

C.2 Language **for** learning

How to describe
How to predict
How to compare
How to explain
How to justify
Learning how to learn: the language for pair group
Understanding instructions
How to deal with not understanding

C.3 language **through** learning

Dictionary use for vocabulary extension
Reference books use for nutrition and respiration information.

D. Culture	D. Culture
Understand the social life of some insects Understand differences between an insect's colony and human society. Understand the differences in reasons for migrate between monarch butterflies and people.	Raise awareness about a honeybee's colony members and find difference and similarities with human society ones. Give reasons why people migrate and compare these with those of monarch butterflies.

Teachers' Notes	INVERTEBRATE ANIMALS

Lesson 4 **INVERTEBRATES' PROCESSES OF LIFE**

Introduction

Begin by asking each group to show their poster and explain it to consolidate children's knowledge about the characteristics of the invertebrate groups.
Introduce the topic of this unit explaining to children that invertebrates have not only a different appearance, but also a different type of nutrition, respiration, reproduction, sensitivity and movement. And that is what they are going to study during this lesson.

Activities

Nutrition

- Find out what children remember about what vertebrates eat by asking them *Do you remember what vertebrates eat? Do you think any invertebrate eats plants/ meat/ plants and meat? Do you remember what animals that eat plants/ meat/ plants and meat are called?*
  Show them **"Invertebrates" Power Point,** slide 18, 19 and 20 explaining the information given on each one. Ask them to think about other examples of invertebrates that have a very simple digestive system / herbivore/ carnivores/ omnivores.
  Organize children in groups of three. Hand out five invertebrates' cards of **Resource Sheet 5 " Named Invertebrates' cards** to each group and ask them to predict what they eat. Then hand out copies of **Activity Sheet 8 " Nutrition and Respiration"** to children and ask them to write the name of the animal on the chart and cross their prediction. Provide each group with a copy of **Resource Sheet 6 " Predicting, Reporting and Comparing"** and ask some groups to tell what they have predicted.

Respiration

- Find out what children remember about how vertebrates breathe by asking them *Do you remember how vertebrates breathe? Can you think any of invertebrates that have lungs/ gills? Any of them that breathe through the skin like tadpoles*?
  Show them **"Invertebrates" Power Point,** slide 21 and 22. Clarifying the information given on them. Then refer them to the invertebrates' cards they have and ask them to predict how those animals breathe and record it on the **Activity Sheet 8** chart. Next ask each group to give their predictions.
- Provide children with books about invertebrates and ask them to find out what they animals eat and how they breathe and record the information on Activity Sheet 8 chart.
  Once they have finished it ask some groups to tell what they have found. Afterwards ask each group to join another one and tell them what they predicted and what they found.
  To finish the activity, ask children to write their conclusions.

Reproduction

- Introduce Reproduction by showing them **Invertebrates" Power Point,** slide 23. Ask them if they remember what type of reproduction vertebrates have.
  Establish that in a sexual reproduction the new organism is formed by the fusion of a female egg cell and a male sperm cell.
  That asexual reproduction involves only one parent and the new organism is

genetically identical to the parent.

- Slide 24. Explain the information given and add that the snail is a hermaphrodite.
- Slide 25. Ask them *Can you think of some animals that change? (frog/ toad they have already studied)*
  Can you think of an insect that changes?

It would be a good idea to have silkworms in the class to see their metamorphosis stages.

- Slide 26. Explain the four stages of a complete metamorphosis. Hand out copies of **Resource Sheet 7 " Describing the life cycle of an insect". A**sk different children to describe one of the four stages.
- Slide 27. Without explaining anything, ask children *Why is it called incomplete? What's the difference?* Help them to answer and ask different children to describe one of the stages with Resource Sheet 6 support.

- Hand out a copy of **Activity Sheet 9 " The life cycle of a mosquito, cut outs"** to each child. Ask them to cut out the stages of life of a mosquito, put them in other and check it with their partner. Ask them whether the metamorphosis is complete or incomplete. Then hand out copies of **Activity Sheet 10 " The life cycle of a Mosquito"** and ask children to stick the stages there. Then to describe the process.

- To consolidate the knowledge of metamorphosis hand out copies of **Activity Sheet 11 " The Damselfly's Story**" to children. Ask them to observe the Damselfly photo and explain them that *it looks quite similar to a dragonfly. They have long, slender bodies, two pairs of large wings, and very large eyes. The dragonflies, though, have a stouter body. Dragonfly wings do not fold (unlike more complex insects). Dragonflies rest with their wings spread open, while damselflies have them closed. Dragonflies are much more energetic flyers than the more delicate damselflies.*
  Ask them to fill in the missing words to complete the story. Check their answers and record it as assessment.

- Follow with asexual reproduction examples showing **"Invertebrates" Power Point,** slide 28 and 29.

Movement

- Ask children to brainstorm the different ways that invertebrates can move, write them on the board. Then display **" Invertebrates" Power Point,** slide 26. Ask children to read the ways of movement listed on it and compare it with the one on the board. Explain the new kinds of movement to them.
  Finally ask them to name examples of invertebrate species that move in those ways and record them next to each of them.

Sensory systems

- Remember them what sensory systems are and give them example of this in invertebrates showing **Invertebrates" Power Point,** slide 24 and 25.
- Hand out copies of **Activity Sheet 12 " Monarch Butterfly Migration"** to children. Ask children to read the text by themselves. Then ask different children to read a paragraph and clarify their doubts. Then, ask *which senses does monarch butterfly have that helps her to reach the place?* Next, ask them to answer the questions in pairs. Check the answers and ask them if there is any similarity between monarch butterfly reasons to migrate and people's ones.
  Ask children to read again the text and answer the questions. Warn them to think

carefully before answering the questions.
Check and comment the answers with the whole class.

- Introduce what social insects are, explaining to children the text on **Activity Sheet 13**. This is a jigsaw activity, so organize children in groups of three. Ask each group to decide who of them is going to be A, B and C. Ask all the As to join in one of the corners of the class, Bs in another one and Cs in another. Explain to them that each letter is going to be a different member of a honey's hive, that your are going to give them a sheet with the information of his or her name, body description and jobs into the hive, **Resource Sheets 7 " The Queen", 8 " A Drone", 9 "Worker"**. They work is to memorise that information, then go back to their group and tell the information to the rest of the group to be able to complete the chart of Activity Sheet 18 that you have left on their tables. Tell them not to worry because you are going to leave them enough time to do it. Point out that any of them can go back to the corner if he/she doesn't remember all the information.
  Once all the groups have finished the activity talk about the members of a honeybee's hive. Then ask them to think about the differences and similarities with our society. To support them provide them with copies of **Resource Sheet 10 " In a Honey Bee's Colony and in Our Society"** and to decide, in-group, which ones are similarities and which ones are differences.
  Check the answers and ask them to record them on their activity sheet.

- To consolidate all the new knowledge learned split the class into 5 groups, hand out a copy of a different processes of live mind map labels, Activity Sheets 14 " Nutrition", 15 "Respiration", 16 " Reproduction", 17 "Sensory System", 18 " Movement", to each group and ask them to follow the steps above

  a. Cut out the mind map labels.
  b. Organise the mind map.
  c. Check it with your teacher.
  d. Complete the empty labels with examples.
  e. Stick the labels and draw the arrows.

  Once all groups have finished their mind map ask them to explain it to the rest of the groups and display them on the wall as a reminder.

Activity Sheet 8	INVERTEBRATE ANIMALS

NUTRITION AND RESPIRATION OF SOME INVERTEBRATES

We want to investigate how ……breathe and what they eat.

Prediction (X) Results (√)

INVERTEBRATE	NUTRITION			RESPIRATION			
	Herbivore	Carnivore	Omnivore	Gills	Lungs	Skin	Trachea

Conclusions

Resource Sheet 6	INVERTEBRATE ANIMALS

PREDICTING, REPORTING AND COMPARING

Predicting

We think	……	are breathe	 with through	herbivores carnivores omnivores lungs gills tracheal system skin

Reporting

We found	……	are		herbivores carnivores omnivores
		breathe	with through	lungs gills tracheal system skin

Comparing

We thought	……	would	be		herbivores carnivores omnivores	But they ...
			breathe	with through	lungs gills tracheal system skin	

Resource Sheet 7	INVERTEBRATES

DESCRIBING THE LIFE CYCLE OF AN INSECT

First	……..	lay
Then	egg	hatch
Later	caterpillar	come out
Finally	larva	change into
	nymph	break open
	pupa	emerge

Resource Sheet 7	INVERTEBRATES

DESCRIBING THE LIFE CYCLE OF AN INSECT

First	……..	lay
Then	egg	hatch
Later	caterpillar	come out
Finally	larva	change into
	nymph	break open
	pupa	emerge

Activity Sheet 9	INVERTEBRATE ANIMALS

THE CYCLE OF LIFE OF A MOSQUITO

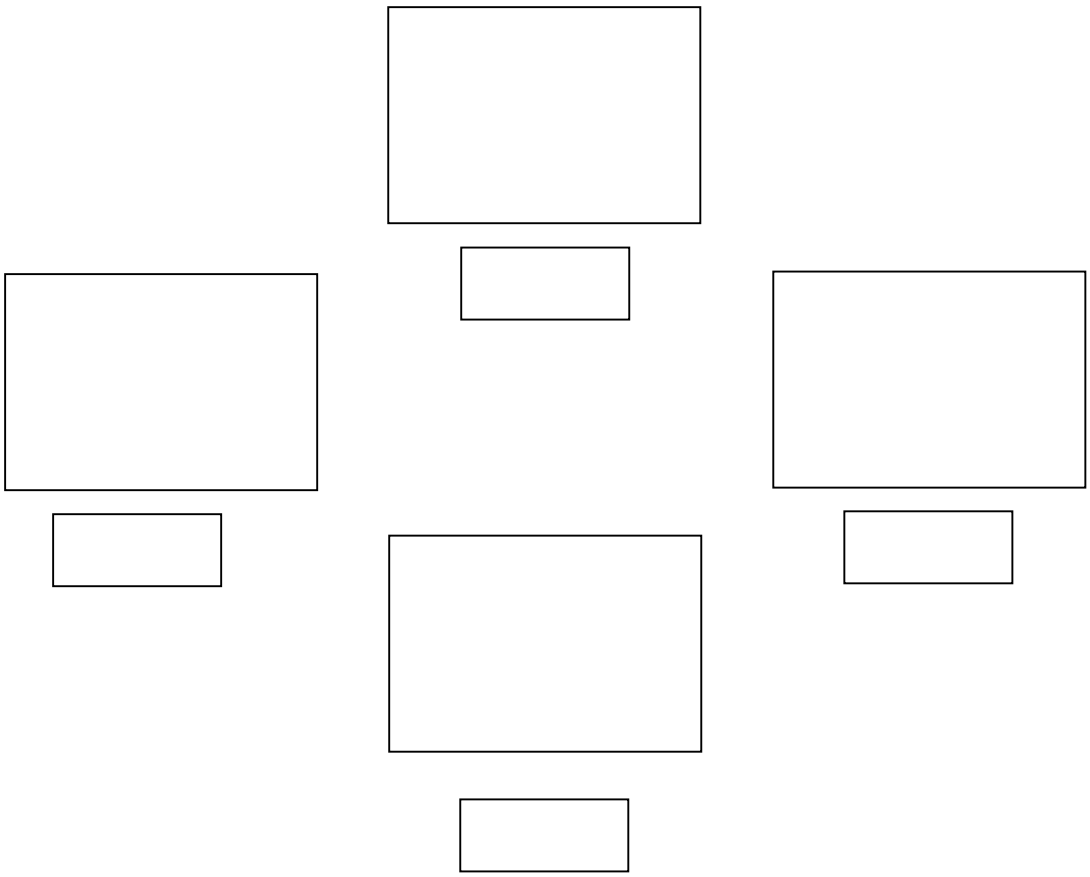
1. Cut out the stages of life a mosquito.
2. Stick them in order on Activity Sheet …

Adult	eggs	larva	pupa

Activity Sheet 10	INVERTEBRATE ANIMALS

THE CYCLE OF LIFE OF A MOSQUITO

3. Stick the stages of life of a mosquito in order.
4. Draw the arrows.



5. Describe the cycle. (Use **first, then, next and finally**).

Activity Sheet 11	INVERTEBRATE ANIMALS

THE DAMSELFLY'S STORY

1. Fill in the missing words.

My story started when my mother laid an …….. under the …….. on some…….. Later I was born. I was a …….. I was a …….. version of my …….. I lived in the water for one …….. When it was time for me to change into an …….. I went out of the water. My ……..began to split and I emerged. My …….. and …….. were soft. After a while, they were hard and I could ……..very …….. At last, I found a …….. and I laid some …….. of my own.

egg **body** **fly** **nymph** **wings** **skin** **mate**
eggs **water** **vegetation** **adult** **years** **fast** **smaller**

Activity Sheet 12	INVERTEBRATE ANIMALS

MONARCH BUTTERFLY MIGRATION

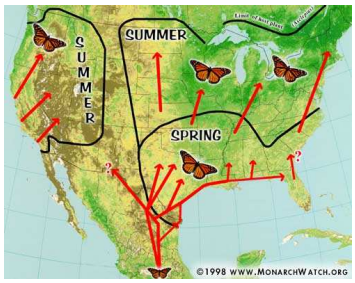
1. Read.

A monarch butterfly that comes out of its chrysalis at the end of summer cannot mate or lay eggs. That is because the milkweed is dying and there would not be any food for the caterpillars.

To survive the cold winter, these monarchs migrate to south, to California or Mexico. The journey it takes one or two months. The monarchs use the position of the Sun in the sky to help them find their way.

When spring comes, the days become longer and warmer. This tells the monarch butterfly that is time to fly north. It also makes changes in their bodies. They are able to mate. After mating the female lay eggs underneath a milkweed plant leaf.

Chrysalis case inclosing the pupa of a butterfly
Mate when a male and a female come together to make babies.
Migration a journey between two different parts of the world to find better conditions to live.
Milkweed a plant that has got milky juice and it is a nectar juice for bees and food for monarch butterfly caterpillar.
Pupa insect going to the stage between larva and adult.



2. Answer

a. What kind of climate does a monarch butterfly need to survive?

b. If a butterfly flies 3.000 Km to reach Mexico does it come from Brazil or Canada? Why?

c. Why does the monarch female lay eggs on a milkweed plant?

d. And what would be the reason to glue the egg underneath a leaf?

e. The female butterfly dies after having laid all its eggs. What do you think happens to the male?

- It finds another mate.
- To mate is such a hard work that it dies after mating.
- It migrates.
-

Activity Sheet 13	INVERTEBRATE ANIMALS

SOCIAL INSECTS

Social insects live in colonies, a giant family. Some colonies contain only a few dozen of members, but the biggest can have many millions. The insects in a colony work as a team, building a nest, finding food and raising the colony young.

Social insects include all ants and termites and many species of bees and wasps. By living and working together, they have become some of the most successful animals on Earth.

1. Complete the chart with all the information you and your friends have got.

A Honey bee's Hive

Member of the hive	Body (parts & size)	Quantity	Job in the colony

2. Think about similarities and differences between a bee's colony and human society.

Resource Sheet 8	INVERTEBRATE ANIMALS

HONEY BEE'S HIVE

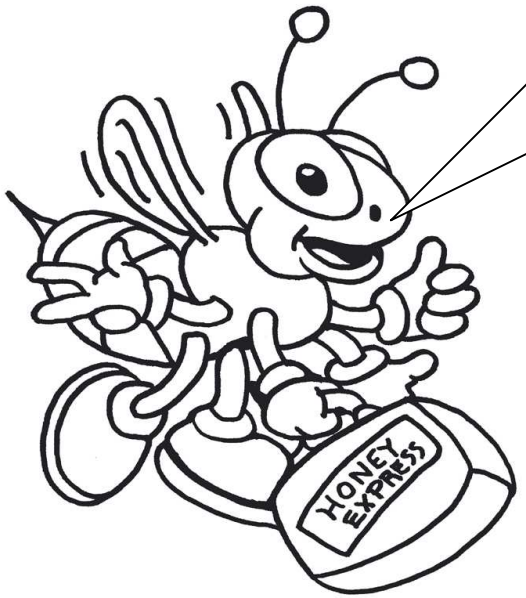
Hi! I'm the queen of the colony. I 'm the largest honeybee, about 22 mm long. My body is divided into three parts: head, thorax and abdomen. I've got 6 legs, 2 wings, two antennae and the sting.

I'm the only fertile female of the hive. My job is to lay thousands of eggs a day and control how they develop.

I never leave home.

Resource Sheet 9	INVERTEBRATE ANIMALS

HONEY BEE'S HIVE



Hi! I'm a drone. I'm a medium honeybee. My body is divided into three parts: head, thorax and abdomen. I've got 6 legs, 2 wings and two antennae. I don't have a sting, so I'm defenseless.

I'm a male and my only job is to fertilize the Queen during the mating season. Afterwards I die.

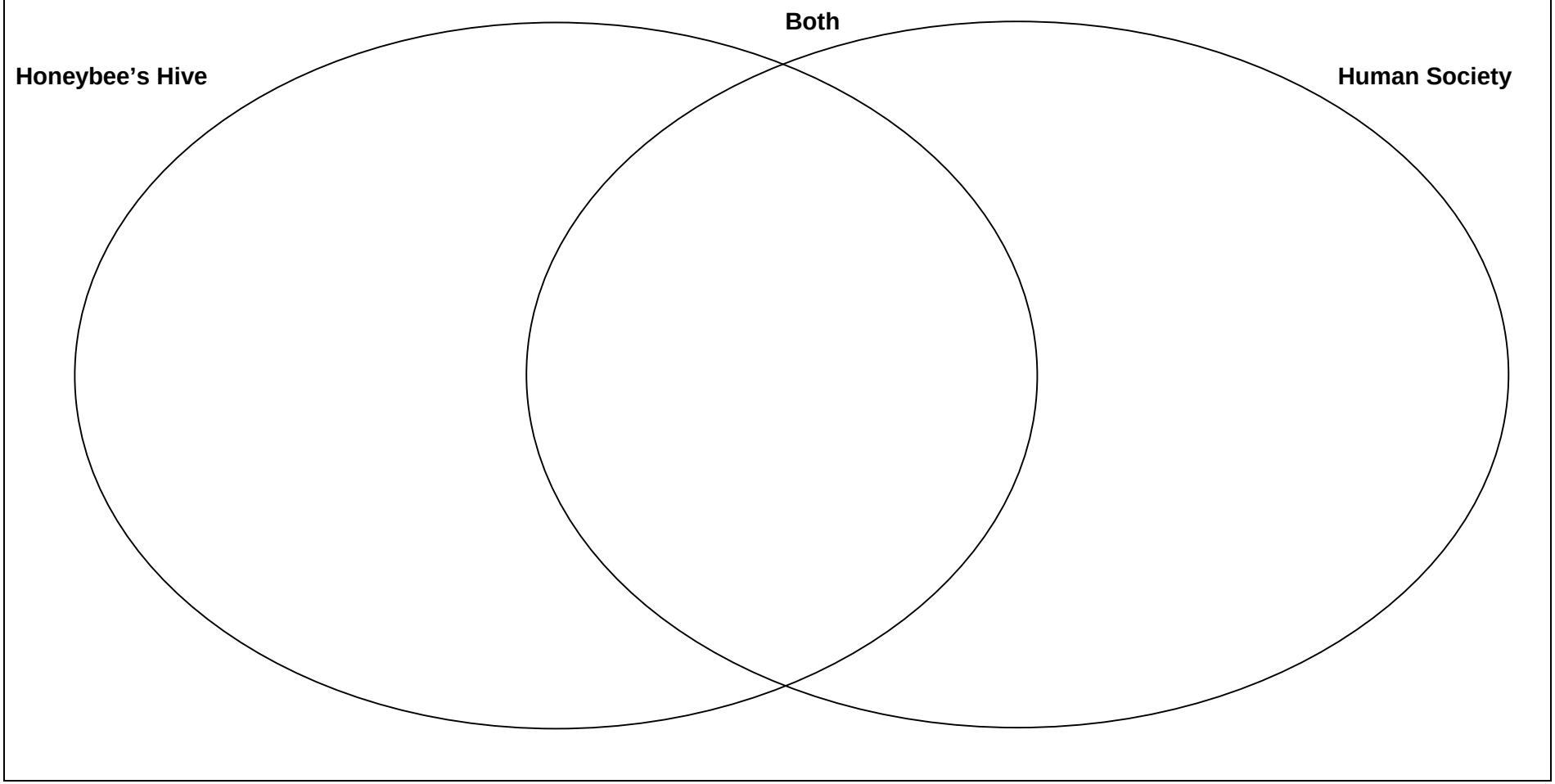
We are about 300 drones in the hive. We can live there only in spring and summer.

Resource Sheet 10	INVERTEBRATE ANIMALS

HONEY BEE'S HIVE

Hi! I'm a worker of the colony. I 'm the smallest honeybee, about 16 mm long. My body has the same parts as the queen's. I'm an infertile female. We are about 50.000 in the hive. We are very busy. We repair the cells and also make new ones; we keep out intruders, collect pollen, nectar, water and tree resin; we make honey, we feed the queen and the larvae and we also keep the hive cool by beating the wings.

Activity Sheet 13b	INVERTEBRATE ANIMALS



Resource Sheet 11	INVERTEBRATES

IN A HONEY BEE'S COLONY AND IN OUR SOCIETY

There is a Queen.

There are males and females.

There are young and adults.

The Queen lays eggs.

The males don't work.

The females do a lot of jobs.

The females are infertile.

The males die after mating.

The Queen is the mother of all members.

The females feed the young.

The young are very different from the adults.

There are more females than males.

All live in one place.

Resource Sheet 11	INVERTEBRATES

IN A HONEY BEE'S COLONY AND IN OUR SOCIETY

There is a Queen.

There are males and females.

There are young and adults.

The Queen lays eggs.

The males don't work.

The females do a lot of jobs.

The females are infertile.

The males die after mating.

The Queen is the mother of all members.

The females feed the young.

The young are very different from the adults.

There are more females than males.

All live in one place.

Activity Sheet 14	INVERTEBRATE ANIMALS

NUTRITION MIND MAP LABELS

1. Cut out the mind map labels.
2. Organise the mind map.
3. Check it with your teacher.
4. Complete the empty labels with examples.
5. Stick the labels and draw the arrows.

NUTRITION OF INVERTEBRATES

Herbivore

Carnivore

Omnivore

Simple digestive system

It eat nutritive particles

It eats plants and meat

It eats only plants

It eats only meat

Activity Sheet 15	INVERTEBRATE ANIMALS

RESPIRATION MIND MAP LABELS

1. Cut out the mind map labels.
2. Organise the mind map.
3. Check it with your teacher.
4. Complete the empty labels with examples.
5. Stick the labels and draw the arrows.

RESPIRATION of INVERTEBRATES

Gills

Through skin

Tracheal system

A kind of lung

One mollusc

Some arthropods

Some annelids

Some aquatic invertebrates

Activity Sheet 16	INVERTEBRATE ANIMALS

REPRODUCTION MIND MAP LABELS

1. Cut out the mind map labels.
2. Organise the mind map.
3. Check it with your teacher.
4. Complete the empty labels with examples.
5. Stick the labels and draw the arrows.

REPRODUCTION OF INVERTEBRATES

Sexual

Asexual

Oviparous

Development

Animals' sex

Fragmentation

Hermaphrodite

Direct

Metamorphosis

Indirect

Unisexual

Activity Sheet 17	INVERTEBRATE ANIMALS

MOVEMENT MIND MAP LABELS

1. Cut out the mind map labels.
2. Organise the mind map.
3. Check it with your teacher.
4. Complete the empty labels with examples.
5. Stick the labels and draw the arrows.

MOVEMENT OF INVERTEBRATES

Flying

Hopping

Walking

Slithering

By expelling water from its body

With a row of adhesive suckers

Water

Land

Land

Land

Land

Water

Water

Activity Sheet 18	INVERTEBRATE ANIMALS

SENSORY SYSYEM MIND MAP LABELS

1. Cut out the mind map labels.
2. Organise the mind map.
3. Check it with your teacher.
4. Complete the empty labels with examples.
5. Stick the labels and draw the arrows.

SENSORY SYSYEM OF INVERTEBRATES

SENSES

Eyesight	Touch	Smell	Taste
Eyes	Antennae	Antennae	Antennae
Tentacles			

CLIL Lesson Plan 5: **Minibeasts.**

Aims

- To carry out an investigation of minibeasts.

Objectives

Teaching Objectives	Learning Outcomes Children will be able to
A. Content	A. Content
• The variety of minibeasts in our playground. • Name, group and characteristics of those minibeasts. • Equipment needed to collect minibeasts.	• Name minibeasts. • Describe minibeasts. • Memorise Key vocabulary. • Memorise and use key phrases.
B. Cognition	B. Cognition
• Understand rules and apply them. • Identify minibeasts. • Classify of minibeast. • Recognise different minibeasts. • Make an independent investigation. • Knowledge transfer.	• Memorise key phrases and apply them in different ways. • Transfer key language • Observe in detail minibeasts. • Identify and collect minibeasts. • Describe minibeasts. • Classify minibeasts. • Present information on minibeasts. • Understand justification.
C. Communication	
C.1 Language **of** learning	
Key phrases needed: It is… It has… It belongs to… It eats… It breathes with/ through I should do I shouldn't do Key vocabulary: snail, butterfly, ladybird, spider, worm, woodlouse, cricket, fly, bee, wasp, larva, pupa, ant, millipede, centipede…annelid, insect, arachnid, crustacean, mollusc, big, small, tiny, short, long, tall, round, jointed, compound, colours, numbers, soft, exoskeleton, shell, head, thorax, abdomen, mouth, eye, antenna, leg, wing, cephalothorax magnifying glass, pooter, container, paintbrush, net.	

C.2 Language **for** learning

How to predict
How to describe
How to explain
How to justify
How to report.
How to present information.
Learning how to learn: the language for pair group
Understanding instructions
How to deal with lack of understanding

C.3 language **through** learning

Dictionary use for vocabulary extension.
Reference books use for information.

D. Culture	D. Culture
Development of interest and curiosity. Development of attitudes of caring and protection. Encourage positive attitude towards conservation. Encourage cooperative work.	Collect minibeast and handle them gently. Show respect for minibeasts and their habitats. Work cooperatively in their groups.

Teachers' Notes	INVERTEBRATE ANIMALS

Lesson 5 **MINIBEAST**

Introduction

Begin the lesson by explaining to children that during this lesson they are going to put in practice all they have learn during the unit. That they are going to carry out an investigation about minibeasts in our playground. Clarify with them that minibeasts is a term used to describe all small invertebrates.

Activities

- Ask children, in pairs, what minibeasts they think they are going to find, and ask them to record their names on a piece of paper. Then ask them to read their lists and to give the reasons. If they use their L1 then rephrase it in English and write it on the board. E.g. there is food for them; they have somewhere to hide from birds, I have seen them before…

- Organise children in groups of three. Explain that they are going to collect minibeasts in those groups, but first it is important to think about how they will treat the animals. Ask the question *Can you tell me anything that you should do when you look at minibeasts? And anyone that you shouldn't do*?
  To help them, provide each group with a different sentence of **Resource Sheet 12 " How to Treat Minibeasts"** and ask them to decide whether they should do which or shouldn't do. Write on a blank A3 *I should do* and on another *I shouldn't do*, stick them up on the board and ask one child of each group to stick theirs up on the corresponding column. Finally ask the rest of the groups if they agree and talk about it.

- Show children the equipment they are going to use: pooters, containers, paintbrushes, nets and plastic gloves. Explain them how to use each one.
  - The paintbrush is used to lift small creatures with out touching them.
  - A container. To used to keep the creatures.
  - A pooter is a small container with two tubes inserted into holes in the lid, one of which has a piece of muslin covering the end. It is used to pick up very small creatures. To use it, place the uncovered tube over the insect and suck on the on the other tube. The muslin covering will prevent you from swallowing the insect, so it should be safety drawn into the container.
  - The net. First sweep the net across, then hold the neck close and shake the contents gently into a container.
  - Plastic gloves. To prevent you from being hurt.

Explain them where they are going to go, how long they are going to be there and what the rules are. Remember them to record where they find each minibeast in order to complete the minibeast's card later.

- Once in the class again, provide each group with a magnifying glass, reference books and key databases and a digital camera. (You can ask children to bring theirs in advance).

  Hand out a copy of a **"Criteria Card for Minibeast Card"**, **Resource Sheet 13, to each group** read it aloud and explain them all the steps to follow.
  - Take the picture.
  - Observe the minibeast in detail.
  - Identify it.

- Describe it.
- Search information of it.
- Complete the minibeast card on the computer.
- Ask teacher to check.
- Print the card.

Remember children to return the minibeasts to the places they were taken them, carefully without damaging them.

- Ask each group to present the minibeast cards they have completed to the rest of the groups.

Record how children have completed the minibeast cards and present them as assessment.

- Laminate all the minibeast cards and make a book with them. Leave it in the class library and give children the possibility to take it home and show and explain it to their families.

Resource Sheet 12	INVERTEBRATE ANIMALS

HOW TO TREAT MINIBEASTS

HANDLE MINIBEASTS CAREFULLY SO WE DON'T DAMAGE THEM

DON'T KEEP THE MINIBEASTS A LONG TIME

DON'T HURT MINIBEASTS IN ANY WAY

PUT MINIBEASTS BACK WHERE WE FOUND THEM

Resource Sheet 13	INVERTEBRATES

CRITERIA CARD FOR MINIBEAST CARD

1. Write the name of the mini beast at the top.
2. The group to which it belongs.
3. Stick a picture of it.
4. Describe the mini beast.
   Comment on:
   - Overall shape of the mini beast, e.g. bug-like/worm-like.
   - Colour.
   - Whether the body is segmented- if so, how many segments there are.
   - Whether wings or wing covers are present.
   - Whether it appears to have eyes-if so, what they are like (position/size).
   - Number of legs.
   - Whether they are jointed –if so, how many joints there are.
   - How the animal moves.
   - Whether the animal is adult or young (larva, nymph).

5. Name the habitat that the animal lives.
6. Name the main types of food it eats.

Resource Sheet 13	INVERTEBRATES

CRITERIA CARD FOR MINIBEAST CARD

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- Number of legs.
- Whether they are jointed –if so, how many joints there are.
- How the animal moves.
- Whether the animal is adult or young (larva, nymph).

5. Name the habitat that the animal lives.
6. Name the main types of food it eats.

My Self-Assessment Booklet

……

……

Shelf-Assessment Booklet 1	INVERTEBRATE ANIMALS

IN THIS UNIT WE WILL LEARN ABOUT INVERTEBRATES ANIMALS

- **Their characteristics**
  - **Body**
  - **Nutrition**
  - **Respiration**
  - **Reproduction**
  - **Movement**
  - **Sensory Systems**

- **Their classification**
  - **Annelids**
  - **Arthropods**
    - **Insects**
    - **Myriapods**
    - **Arachnids**
    - **Crustaceans**
  - **Molluscs**
  - **Cnidarians**
  - **Echinoderms**

- **We will carry out an investigation of minibeast.**

Shelf-Assessment Booklet 2	INVERTEBRATE ANIMALS

SELF-ASSESSMENT − +

1. I know what invertebrates animals are			
2. I can define invertebrate in English			
3. I can recognise invertebrates			
4. I can identify invertebrates using a key			
5. I can name the invertebrates groups in English			
6. I can name species of each group in English			
7. I know the main features of each group			
8. I can describe invertebrates' body in English			
9. I can classify invertebrates			
10. I know about invertebrates' nutrition			
11. I know how some invertebrates breathe			
12. I know how invertebrates reproduce			
13. I can describe an insect's cycle of life in English			
14. I know how invertebrates move			
15. I know about invertebrates senses			
16. I know about monarch butterflies migration			
17. I can name honeybees' hive members in English			
18. I know honeybees' hive members' jobs			
19. I can collect minibeast carefully			
20. I can find information about minibeasts			
21. I can present that information in English			
22. I work cooperatively in pairs/ group			
23. I try to speak in English during the lesson			

Shelf-assessment Booklet 3	INVERTEBRATE ANIMALS

MY FAVOURITE ACTIVITIES

1. My favourite individual activity has been……..

   ……

   because…….

2. My favourite activity in pairs has been……..

   ……

   because…….

3. My favourite activity in-group has been……..

   ……..

   because…….

   ……..

Shelf-assessment Booklet 4	INVERTEBRATE ANIMALS

I WOULD LIKE TO LEARN MORE ABOUT

……

……

……

……

……

……

……

……

……