SCIENCE
YEAR 5-6
Cycle A - Unit 5

Life cycles and classification

Richard Watkins, GwE
richardwatkins@gwegogledd.cymru
@DrRWatkins

RANGE

Interdependence of organisms

4. through fieldwork the plants and animals found in two contrasting local environments
5. the interdependence of living organisms in the environments and their representation as food chains
6. the environmental factors that affect what grows and lives in the environment, e.g. sunlight, water availability, temperature.

KEY VOCABULARY

pollination
fertilisation
germination
seed dispersal
carnivore
herbivore
omnivore
classification
vertebrate
invertebrate
endangered
extinction
data
bar chart
frequency
median/mode/range
axes

Developing thinking

(Plan-Develop-Reflect integrated into activities)

LNF - Main Numeracy Strands covered*

Strand:
Developing numerical reasoning.
Element:
Identify processes and connections, Represent and communicate, Review.

Strand:
Using measuring Skills.
Element:
Length, weight/mass, capacity, Time, Temperature.

Strand:
Using data skills.
Element:
Collect and record data, Present and analyse data, Interpret results.

**Refer to LNF Numeracy framework for details of specific skills within each element.*

LNF – Literacy (writing) opportunities

Element: Organising information and ideas
Writing accurately

Writing to inform, discuss and explain

Developing ICT

School to identify and provide opportunities for developing this skill within the scope of the unit.

Curriculum Cymreig

School to identify and provide opportunities for developing this skill within the scope of the unit.

Personal and social education

School to identify and provide opportunities for developing this skill within the scope of the unit.

Science – Medium Term Planning (half term)

Year Group	5-6	Term	Cycle B – Unit 5	Unit Title	Life cycles and classification

Range: ***Interdependence of organisms***
4. through fieldwork the plants and animals found in two contrasting local environments
5. the interdependence of living organisms in the environments and their representation as food chains
6. the environmental factors that affect what grows and lives in the environment, e.g. sunlight, water availability, temperature.

Cross Curricular Links:

Skills (Principal skills in bold italics)	**Suggested activities**	**Resources and web links**	**Assessment Opportunities**
PLAN Identify gaps in prior knowledge ***Find relevant information and ideas***	**1. Big Question: What do you recall about plants, food chains and habitats?** Introduce topic and show pupils video clips/photos that trigger debate on the key words: habitats, food chains, life cycles etc. Discuss and record pupils' initial ideas. **1a. Big Question: Do you know the parts of a plant?** Use online activities to elicit pupils' ideas about parts of a plant and how plants reproduce. **Introduce the skill – Search for information and ideas. Plants & Animals – NGfL KS2 science** • Discuss principal parts of a plant, e.g. stem, petals, stigma, stamen etc • Challenge pupils to label a plant then self assess. • Ask pupils to find out more information about the parts they are unsure of. **Practise the skill – Search for information and ideas. Plants & Animals – NGfL KS2 science** • Pupils create their own research notes and update a labelled diagram of a plant, noting from where/how they sourced their information. Groups to swap research notes and peer assess. **To write to inform** **Text type: Diagrams and notes**	Variety of books, websites etc http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://www.bbc.co.uk/schools/ks2bitesize/science/	***Can pupils find and use a variety of evidence, information and ideas? (Level 4)*** ***Can pupils find and use relevant evidence, information and ideas? (Level 5)***

COMMUNICATE ***Communicate clearly by writing using relevant scientific vocabulary*** **PLAN** Search for relevant information **DEVELOP** ***Use prior knowledge to explain*** **REFLECT** Suggest how the method/process could have been improved	**2. Big Question: What do you know about the life cycle of a flowering plant?** Review pupils' ideas about what we understand by the term 'plant'. Do they all have flowers, stems, and petals? Or, do lots of plants differ from our common perception of 'a plant'? **Introduce the skill – Communicating using science knowledge. Plants & Animals – NGfL KS2 science** • Discuss the key stages in the life cycle of a flowering plant, e.g. pollination, fertilisation, seed dispersal and germination. • Show pupils photos and diagrams to explain. **Practise the skill – Communicating using science knowledge. Plants & Animals – NGfL KS2 science** • Challenge pupils to create their own labelled diagram in order to explain the life cycle of a flowering plant. Discuss what makes an effective scientific diagram (success criteria). • Pupils create their own research notes and update a labelled diagram. • Consider asking pupils to highlight the key new vocabulary they have learned/utilised. Review diagram and suggest improvement **To write to inform** **Text type: Diagrams, notes and annotation**	http://www.naturegrid.org.uk/biodiversity/plantindex.html http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://www.bbc.co.uk/schools/ks2bitesize/science/	***Can pupils organise and communicate their findings integrating different forms in various presentations? (Level 5)*** ***Can pupils explain using scientific knowledge? (Level 4)***
PLAN ***Plan the approach/method to be used*** **DEVELOP** ***Know the key variables to be controlled*** Select equipment and techniques **REFLECT** Describe how they have learned, and identify the ways that worked the best.	**3. Big Question: What affects plant growth and/or germination?** Discuss question and elicit pupils' ideas. Consider using a true/false card sort activity to identify the key variables to investigate. **Introduce the skill – Plan systematically** • Discuss the question pupils wish to investigate (i.e. germination or growth) • Discuss variables and aspects of fair testing (e.g. light level, temperature, volume of water, type of soil etc.) • Model a systematic plan. • What makes an effective science plan/method (success criteria)? **Practise the skill – Plan systematically** • Challenge pupils to produce a systematic science plan/method • Gather resources and carry out investigation • Plan to make systematic observation/measurements of growth or germination over time. • Tabulate findings. **To write to inform** **Text type: science write-up/report**	Card sort activity http://www.bbc.co.uk/schools/ks2bitesize/science/ http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html	***Can pupils plan systematically? (Level 5)*** ***Can pupils identify all the key variables? (Level 5)***

PLAN Search for relevant information Ask relevant questions **DEVELOP** ***Make comparisons in information*** ***Use science knowledge to explain*** **REFLECT** Decide whether the method was successful	**4. Big Question: How do scientists classify living things?** Show groups of animals/plants and discuss methods of sorting and grouping. Use online activities in order to group and sort examples of plants/animals. Focus on observation as a key scientific skill. **Introduce the skill – Making comparisons in findings. Animals & Plants and Kites – NGfL KS2 science** • Discuss the nature of classification keys. Model how to construct a classification key. • What makes a good classification key? • Discuss the closed nature of the questions. **Practise the skill – Making comparisons in findings. Animals & Plants and Kites – NGfL KS2 science** • Challenge pupils either to use ICT software (if available) to construct a classification key and/or construct one using paper, pens, string and card labels. • Recap on pupils' keys. What improvements can be made?	http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://www.rspb.org.uk/wildlife/birdguide/families/ http://resources.hwb.wales.gov.uk/VTC/2010-11/science/red-kites/index.html	***Can pupils draw conclusions and form considered opinions? (Level 4)*** ***Can pupils explain using scientific knowledge? (Level 4)***
PLAN Identify gaps in prior knowledge ***Find relevant information and ideas*** **DEVELOP** ***Use science knowledge to explain*** **REFLECT** Describe how they have learned and identify the way that worked the best	**5. Big Question: Can you sort vertebrates and invertebrates?** Introduce question and elicit pupils' ideas about the following key terms: vertebrates, invertebrates, carnivore, herbivore and omnivore. **Introduce the skill – Find information and ideas** • Recap on the classification of living things – vertebrates and invertebrates • What subgroups of animals occur within vertebrates (e.g. mammals, reptiles etc.) and invertebrates (e.g. insects, molluscs etc.)? **Practise the skill – Find information and ideas** • Challenge pupils to research information about vertebrates and invertebrates and select the most efficient method of summarising and communicating their findings. • **To write to inform** **Text type: non-chronological report, annotated diagram**	http://www.bbc.co.uk/nature/animals/ http://resources.hwb.wales.gov.uk/VTC/ngfl/science/cynnal/english/index.html	***Can pupils find and use a variety of evidence, information and ideas? (Level 4)*** ***Can pupils find and use relevant evidence, information and ideas? (Level 5)*** ***Can pupils explain using scientific knowledge? (Level 4)***
COMMUNICATE ***Communicate clearly using tables, charts and bar charts*** **PLAN** Search for relevant information **DEVELOP** ***Make comparisons and identify and describe trends or patterns in data***	**6. Big Question: How do the life cycles of animals differ?** Introduce question and use interactive resources to elicit pupils' ideas about the longevity of different plants and animals. Do larger animals/plants live longer than smaller ones? **Introduce the skill – Make comparisons and identify trends in data. Animals and Plants – NGfL KS2 science** • Show pupils data showing the life spans of different animals. • Discuss the range, mode and median values. **Practise the skill – Make comparisons and identify trends in data. Animals and Plants – NGfL KS2 science** • Challenge pupils to group the data in order to find the mode, median and range. • Consider grouping life span data and constructing a frequency table and bar chart. • What conclusions can pupils reach? **To write to inform and explain** **Text type: non-chronological report**	http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://www.newton.dep.anl.gov/natbltn/400-499/nb486.htm http://resources.hwb.wales.gov.uk/VTC/ngfl/science/cynnal/english/index.html	***Can pupils organise and communicate their findings integrating different forms in various presentations? (Level 5)*** ***Can pupils draw conclusions and form considered opinions? (Level 4)***

COMMUNICATE Communicate clearly by speech and writing using relevant scientific vocabulary **PLAN** Find relevant information and ideas **DEVELOP** ***Form considered opinions and make informed decisions***	**7. Big Question: Endangered species – how can we help?** Review ideas and arguments from the NGfL online resources – discuss pupils' understanding of key terms (e.g. endangered, extinct). Select a question to debate, e.g. Do we still need zoos? Should red kites be protected? **Introduce the skill – Form considered opinions & make informed decisions.** **Interdependence – NGfL KS2 science** • Discuss the issues and threats to the animals featured on the online resource (e.g. red kites, lowland gorillas or other animals under threat that pupils may identify) • List key vocabulary and discuss the international threat level scale in activity 6. **Practise the skill – Form considered opinions & make informed decisions. Interdependence – NGfL KS2 science** • Challenge groups to plan a presentation in order to contribute to one or more of the debates suggested (e.g. red kites, zoos etc) • Discuss the features of an effective presentation. **To write to discuss or persuade** **Text type: poster or pamphlet**	http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e14-interdependence/index.html http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://resources.hwb.wales.gov.uk/VTC/ngfl/science/cynnal/english/index.html	Can pupils find and use a variety of information and ideas? (Level 4) Can pupils find and use relevant information and ideas? (Level 5) ***Can pupils draw conclusions and form considered opinions? (Level 4)*** ***Can pupils draw conclusions that are consistent with the findings and consider others' views to inform opinions and decisions? (level 5)***
COMMUNICATE Communicate clearly by speech and writing using relevant scientific vocabulary **PLAN** Find relevant information and ideas **DEVELOP** ***Form considered opinions and make informed decisions***	**8. Big Question: Endangered species – how can we help? …cont.** Continuation of previous task. **Practise the skill – Form considered opinions & make informed decisions. Interdependence – NGfL KS2 science** • Challenge groups to plan a presentation in order to contribute to one or more of the debates suggested (e.g. red kites, zoos etc) • Discuss the features of an effective presentation. **To write to discuss or persuade** **Text type: poster or pamphlet**	http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e14-interdependence/index.html http://resources.hwb.wales.gov.uk/VTC/2009-10/science/cripsat/e13-plants-animals/index.html http://resources.hwb.wales.gov.uk/VTC/ngfl/science/cynnal/english/index.html	***Can pupils draw conclusions and form considered opinions? (Level 4)*** ***Can pupils draw conclusions that are consistent with the findings and consider others' views to inform opinions and decisions? (level 5)***

REFLECT ***Describe how they have learned, and identify the ways that worked the best.*** Link the learning to similar situations, within and outside school.	Revisit initial diagnostic assessment. Can pupils demonstrate understanding at end of topic and discuss new skills learned and/or practised?	Use preferred AfL strategy	***Can pupils describe how they have learned and identify the ways that worked the best? (Level 4)*** ***Can pupils identify the thinking/learning strategy they used? (Level 5)***
Evaluation			