Big Question: How do we classify creatures in our local environment?

AoLE: Science & Technology	Subject: Science - Biology	Year: 7

Big Question / Aim / Objective / Concept	Vision (Proposed outcome) / Purpose of curriculum	Prior knowledge / Learners previous knowledge
How do we classify creatures in our local environment?	This unit looks at the work ecologists do in the area around the river Dee. The material covered includes habitats, adaptations and feeding relationships. Pupils then consider how we organise things into groups to make life easier. This is extended to cover biological classification and variation in terms of its genetic and environmental causes. It is an excellent opportunity to investigate the local ecosystems around the river Dee and take science into the field.	From KS2 most pupils will: • Be able to identify that different animals and plants live in different areas. • Describe how some trees drop their leaves in winter and that some animals hibernate. • Interpret food chains (although many will get the arrows the wrong way round). • Be able to define the terms 'predator' and 'prey'. • Be able to explain differences between living and non-living things in terms of characteristics such as movement and growth. • Recognise similarities between large animals and between plants, and differences within groups of large animals. • Use simple keys to identify animals and plants.

What does progression look like in this Big Question?

Progression Indicator	Description of learning (What matters statements)	Student evidence of progression (Blooms) / Knowledge
Excelling	I can describe the interdependence of organisms in ecosystems and explain how this affects their chances of survival. I can explain how reproduction, mutations and the environment can lead to variation and adaptations within organisms which can affect their chances of survival. I can describe the impacts of science and technology, past and present, in my everyday life. I can understand how my actions and the actions of others impact on the environment and living things. I can engage with scientific and technological evidence to inform my own opinions. I can use my findings to draw valid conclusions. I can review my own opinions based on new scientific evidence.	Recognise the benefits and drawbacks of using differing levels of technology in the fight against diseases. Identify the strength of correlation between patterns in collected ecological data. Explain the contributions of different organisms to a community. Recall what a distribution is. Recall examples of scavengers and parasites. Explain how a food web can be used to predict changes in population sizes, when certain events occur in a habitat. Describe why different organisms in a community need slightly different environmental conditions (microhabitats) Use food webs to predict both short and long term effects of changes in a habitat. Explain that inherited and environmental causes of variation cannot be separated completely. Explain the difference between continuous and discontinuous variation.

Advancing	I can describe how living things compete for specific resources and depend on each other for survival. I can describe the features of organisms and recognise how they allow them to live, grow and reproduce for survival in their environment. I can suggest conclusions as a result of carrying out my inquiries. I can identify questions that can be investigated scientifically and suggest suitable methods of inquiry. I can use design communication methods to develop and present ideas, and respond to feedback. I can use a range of models to explain and make predictions. I can select relevant scientific knowledge from a range of evidence sources to evaluate claims presented as scientific facts.	Recognise the need for a large sample size in investigations. Measure a range of environmental factors in a habitat. Explain why a certain method of sampling is suitable for answering a certain scientific question. Evaluate results to match changes in environmental conditions to animal and plant behaviour. Explain what the arrows in a food chain show. Use food chains to draw food webs. Identify ways in which organisms compete with one another. Describe the causes of variation between organisms. Define what a species is. Recall what a normal distribution is.
Securing	I can recognise that what I do, and the things I use, can have an impact on my environment and on living things. I can identify the threats to the development and health of organisms and recognise some natural defences, preventions and treatments. I can explore relationships between living things, their habitats and their life cycles. I can explain how my data is used by services, which can help me make more informed decisions when using technology. I can identify questions that can be investigated scientifically and suggest suitable methods of inquiry. I can suggest conclusions as a result of carrying out my inquiries. I can evaluate methods to suggest improvements.	Recognise when a development is sustainable. Describe how science can provide evidence for making laws. Identify why we use a choice chamber to test behaviour. Make suggestions about suitable questions that can be investigated. Recall examples of adaptations to daily and seasonal changes. Describe some adaptations of animals for feeding. Describe the environmental factors in a habitat. Explain why classifying things is important. Describe differences and similarities between organisms of the same species.
Beginning	I can recognise that plants and animals are living things which grow. I can use my knowledge and understanding to predict effects as part of my scientific exploration. I can recognise patterns from my observations and investigations and can communicate my findings. I can recognise that what I do, and the things I use, can have an impact on my environment and on living things.	State some good and bad effects humans can have on a habitat. Describe ways in which science is used to preserve habitats. Select suitable equipment to take samples from a habitat. Measure an environmental factor in a habitat. State an example of a habitat. Explain how familiar organisms are adapted to their habitats. Draw a food chain. Sort living things into groups.

Authentic learning experiences (Local / National / International)	Skills (Literacy / Numeracy / DCF) / Cross Curricular links
Pupils have the opportunity to investigate local habitats in the area around the Dee river. This topic expands on field work for pupils to investigate how ecology impacts how humans interact with the local ecosystems. The topic allows us to consider projects such as LIFE Dee River and how it is restoring its surroundings back to their natural state. English https://naturalresources.wales/LIFEDeeRiver?lang=en Welsh https://naturalresources.wales/LIFEDeeRiver?lang=cy	Numeracy - Measurement using fine division instruments. - Construction of accurate experimental drawings. - Construction of grid references and use of coordinates to survey habitats. - Use of averages. - Use of whole and decimal numbers. - Investigate continuous and discontinuous data types. - Organise data into normal distributions. Literacy - Describe and explain using connectives to structure reasoning. - Focus on the command words for the description of processes. - Extended writing formalising sentences and structuring paragraphs. Pupils use connectives to explain their reasoning. - Summarise information. - Compare information and evaluate secondary sources of information. - Use oracy skills to present and discuss information.

Assessment (How will we know that students have learnt what we taught them?)	
Formative assessment: - Teacher circulating - Q&A discussions on various phenomenon and scientific understanding - Identify key terms to definitions/examples - Peer/self-assessment tasks - Group experimental work - Explanations of specific processes such as conduction, convection and radiation - Lesson tasks such as measuring angles precisely allows the use of whiteboards or tasks that feedback to the teacher to ensure pupils have learnt the desired process.	Summative assessment: - Pupils will undertake a practical assessment, pupils will have to plan, develop and carry out a practical experiment of their design. - Pupils will undertake longer written questions using correct spelling, punctuation and grammar. - Pupils will undertake a mid topic and end of topic test to assess their understanding and knowledge.

Evaluation (to be completed 2024)		
Strengths	Areas for Development	Pupil Voice