3-LS4-3 Biological Evolution: Unity and Diversity

Next Generation Science Standards

Students who demonstrate understanding can:

3-LS4-3. Construct an argument with evidence that in particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

- *Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.*

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

NGSS Standards

Science and Engineering Practices	Disciplinary Core Ideas	Cross-cutting Concepts
Engaging in Argument from Evidence Engaging in argument from evidence in 3-5 builds on K-2 experiences and progresses in critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Construct an argument with evidence	**LS4.C: Adaptation** For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.	**Cause and Effect** Cause and effect relationships are routinely identified and used to explain change.

Observable features of the student performance by the end of the grade:

1. Supported Claims
    a. Students make a claim to be supported about a phenomenon. In their claim, students include the idea that in a particular habitat, some organisms can survive well, some can survive less well, and some cannot survive at all.

2. Identifying Scientific Evidence
    a. Students describe* the given evidence, including:

- Characteristics of a given particular environment (e.g., soft earth, trees and shrubs, seasonal flower plants).
- Characteristics of a particular organism (e.g., plants with long, sharp leaves; rabbit coloration).
- Needs of a particular organism (e.g., shelter from predators, food, water).

3. Evaluating and Critiquing Evidence
    a. Students evaluate the evidence to determine:
        - The characteristics of organisms that might affect survival.
        - The similarities and differences in needs among at least three types of organisms.
        - How and what features of the habitat meet the needs of each of the organisms (i.e., the degree to which a habitat meets the needs of an organism).
        - How and what features of the habitat do not meet the needs of each of the organisms (i.e., the degree to which a habitat does not meet the needs of an organism).
    b. Students evaluate the evidence to determine whether it is relevant to and supports the claim.
    c. Students describe* whether the given evidence is sufficient to support the claim, and whether additional evidence is needed.

4. Reasoning and Synthesis
    a. Students use reasoning to construct an argument, connecting the relevant and appropriate evidence to the claim, including describing* that any particular environment meets different organisms' needs to different degrees due to the characteristics of that environment and the needs of the organisms. Students describe* a chain of reasoning in their argument, including the following cause-and-effect relationships:
        - If an environment fully meets the needs of an organism, that organism can survive well within the environment.
        - If an environment partially meets the needs of an organism, that organism can survive less well (e.g., lower survival rate, increased sickliness, shorter lifespan) than organisms whose needs are met within that environment.

- If an environment does not meet the needs of the organism, that organism cannot survive within that environment.
- Together, the evidence suggests a causal relationship within the system between the characteristics of a habitat and the survival of organisms within it.

** Unless otherwise specified, "descriptions" referenced in the evidence statements could include but are not limited to written, oral, pictorial, and kinesthetic descriptions.*

Adapted from:

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