SCILLSS Classroom Science Assessment Workshop

# High School Life Science Partially Completed Unpacking Tool

|  |  |  |  |
| --- | --- | --- | --- |
| **Grade:**  | High School |  |  |
| **NGSS Performance Expectation: HS-LS4-5.** Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. |
|  | **Science and Engineering Practices (SEP)** | **Disciplinary Core Ideas (DCI)** | **Crosscutting Concepts (CCC)** |
| **SEP:** **Engaging in Argument from Evidence**Evaluate the evidence behind currently accepted explanations or solutions to determine the merits of arguments. | **DCI:** **LS4.C: Adaptation*** Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline–and sometimes the extinction–of some species.
* Species become extinct because they can no longer survive and reproduce in their altered environment. If members cannot adjust to change that is too fast or drastic, the opportunity for the species’ evolution is lost.
 | **CCC:** **Cause and Effect**Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. |
| **Key Aspects** | * Evaluate arguments about a natural phenomenon based on scientific concepts, principles, and big ideas.
* Use evidence to evaluate the merit of an argument.
 | * Naturally occurring changes in the physical environment may result in changes in the number of individuals of some species and emergence of new species over time.
* Changes in environmental conditions may result in increases in the number of individuals for some species.
* There are causal links between environmental changes and changes in the number of individuals or species.
* Species become extinct because they can no longer survive and reproduce in their altered environment.
 | * Phenomena may have more than one cause.
* Some cause and effect relationships in systems can only be described using probability.
* Empirical evidence is required to make claims about specific causes and effects.
 |
| **Prior Knowledge** | * Use empirical evidence to construct an argument.
* Use scientific reasoning to support an argument.
* Use an argument to support a model for a phenomenon.
* Use an argument to refute a model for a phenomenon.
* Obtain evidence from valid and reliable sources.
* Analyze data to provide evidence for phenomena.
 | * Particular organisms can only survive in particular environments.
* The number of individuals in each species and the number of species in an environment changes over time.
* Environmental factors can determine the ability of individual species to survive and reproduce.
* Natural selection favors organisms that are best suited for the current environmental conditions (i.e., survive, reproduce).
 | **Relationships to SEPs** | * Student engagement in scientific argumentation is often centered about identifying the causes of an effect.
 |

This partially completed unpacking tool was developed with funding from the US Department of Education under Enhanced Assessment Grants Program CFDA 84.368A. The contents do not necessarily represent the policy of the US Department of Education, and no assumption of endorsement by the Federal government should be made.

All rights reserved. Any or all portions of this document may be reproduced and distributed without prior permission, provided the source is cited as: Strengthening Claims-based Interpretations and Uses of Local and Large-scale Science Assessment Scores Project (SCILLSS). (2020). *SCILLSS Classroom Science Assessment Workshop: High School Life Science Partially Completed Unpacking Tool*. Lincoln, NE: Nebraska Department of Education.