NGSS Alignment of Life Right Here and Everywhere

DRK-12 Project Title: *Case Studies of a Suite of Next Generation Science Instructional, Assessment and Professional Development Materials Implemented in Two Diverse Middle School Settings*

The eight-week curricular unit is designed to support learning a total of four NGSS performance expectations; two in each Investigation. The bold text indicates learning goals emphasizing analyzing and interpreting data (also see Table 1).

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem
MS-LS-2-4 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations
MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Investigation 1 Which fifty insects live in my neighborhood?			
Lesson	Competency/Learning Goal	NGSS Anchor Goal	3D Learning (SEP, DCI, CCC)
1. What living things were observed in my city today?	Ask questions (SEP 1) about local biodiversity such as what living things were observed in my city or town today?	**MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.**	SEP 1 – Ask questions DCI - LS2.A: Interdependent Relat in Ecosystems CCC - Cause and Effect
2. Is my animal an insect?	**Analyze and interpret data (SEP 4), then use data as evidence to Engage in argument (SEP 7) to address the scientific question, Is my animal an insect?**		SEP 4, SEP 7- Analyzing/interpreting/ Argument DCI - LS2.A: Interdependent Relat in Ecosystems CCC - Cause and Effect
3.Where do local insects live?	Gather data and evidence (SEP 3) to address the question, Where do local insects live?		SEP 3 – Gather data and evidence DCI - LS2.A: Interdependent Relat in Ecosystems CCC - Cause and Effect
4.What does my insect eat and what eats my insect?	**Analyze and interpret data (SEP 4), then use data as evidence to Engage in argument (SEP 7) to address the scientific question, What does my insect eat and what eats my insect?**		SEP 4, SEP 7- Analyzing/interpreting/ Argument DCI - LS2.A: Interdependent Relat in Ecosystems CCC - Cause and Effect
5. What happens to my insect if the habitat (biology or physical) is disrupted?	**Analyze and interpret data (SEP 4), then use data as evidence to Engage in argument (SEP 7) to address the scientific question, What happens to my insect if the habitat (biology or physical) is disrupted?**	MS-LS-2-4 Construct an argument supported by empirical evidence that changes to physical or biological components	SEP 4, SEP 7- Analyzing/interpreting/ Argument DCI-LS2-C - Ecosystems Dynamics, Resilience CCC -Stability and change
6. Why are insects important?	**Analyze and interpret data (SEP 4), then use data to Engage in argument (SEP 7) to address the scientific question, why are insects important?**		SEP 4, SEP 7- Analyzing/interpreting/ Argument DCI-LS2-C - Ecosystem Dynamics, Resilience CCC -Stability and change

7. How many different kinds of insects live in my neighborhood?	Communicate scientific information (SEP 8) and/or technical information in different formats (e.g., verbally, graphically, textually, and mathematically) about the numbers and kinds of insects in their local environment.	of an ecosystem affect populations.	SEP 8 – Obtaining, evaluating, and communicating information DCI-LS2-C - Ecosystems Dynamics, Functioning, and Resilience CCC -Stability and change

Investigation 2 **What solution might provide a positive impact on the selected insect(s) in our neighborhood?**			
Lesson	Learning Goal	NGSS Anchor Goal	3D Learning (SEP, DCI, CCC)
8. How have others increased butterfly and bee populations in New York City?	Ask questions (SEP 1) about how others have increased butterfly and bee populations in New York City.	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services. MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	SEP1 - Asking Quests and Defining Problems DCI - ETS-1. B: Developing possible solutions CCC- Influence of Science, Engr, and Tech on Society and the Natural World
9. What is one problem associated with the survival of my insect species?	Define a design problem (SEP 1) related to the survival of one of their selected insect species.		SEP 1 - Asking Quests and Defining Problems DCI - ETS1.A: Defining Engineering Problems CCC - Influence of Science, Engr and Tech on Society and the Natural World
10. What are solutions to the problem associated with the survival of my insect species?	Generate multiple solutions (SEP 7) to a problem related to their selected insect.		SEP 7 – Generate multiple solutions DCI - ETS-1. B: Developing possible solutions CCC - Influence of Science, Engineering, and Technology on Society and the Natural World
11. What is the optimal solution to the problem associated with the survival of my insect species?	**Analyze and interpret data (SEP 4) and Evaluate solutions (SEP 7) to determine the optimal one which is feasible and could address the problem related to selected insect.**		SEP 4, 7 – Analyze & interpret data, evaluate solutions DCI - ETS-1. B: Developing possible solutions CCC- Influence of Science, Engineering, and Technology on Society and the Natural World
12. How do I build and implement a solution associated with the survival of my insect species?	Build a solution prototype (SEP 2) of the solution addressing the problem related to their selected insect species.		SEP 2 – Developing and using models DCI - ETS-1. B: Developing possible solutions CCC - Influence of Science, Engineering, and Technology on Society and the Natural World
13. How do I evaluate and improve solutions associated with my insect species?	Evaluate and provide feedback (SEP 7) on others' solutions related to selected insect species.		SEP 7 – Evaluate and provide feedback DCI - ETS-1. B: Developing possible solutions CCC - Influence of Science, Engineering, and Technology on Society and the Natural World
14. How can my solution be implemented? What partners/stakeholders do we need?	Communicate/ share (SEP 8) insect solutions with stakeholders in a public or online format.		SEP 8 – Obtaining, evaluating, and communicating information DCI - ETS-1. B: Developing possible solutions CCC - Influence of Science, Engineering, and Technology on Society and the Natural World

Table 1: NGSS Performance Expectations & Goals in Life Right Here & Everywhere Unit