

NGSS Unit Planning with UbD

Teacher Name: 3rd Grade Team

Date: 2-27-16

**School Site: E. Hale Curran
Butterfly (Module 1)**

Unit: The Naturalist: The Monarch

NGSS Covered:

LIFE SCIENCE-3rd Grade

- From Molecules to Organisms: Structures and Processes - Students who demonstrate understanding can:
 - (3-LS1-1.) Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.
 - Disciplinary Core Ideas
 - Growth and Development of Organisms
 - (LS1.B:1.) Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)
 - Ecosystem Dynamics, Functioning, and Resilience
 - (LS2.C:1.) When the environment changes in ways that affect a place's physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)
 - Evidence of Common Ancestry and Diversity
 - (LS4.A:1.) Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: moved from K-2) (3-LS4-1)
 - Natural Selection
 - (LS4.B:1.) Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing. (3-LS4-2)
 - Adaptation
 - (LS4.C:1.) For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)
 - Biodiversity and Humans
 - (LS4.D:1.) Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)
- Biological Evolution: Unity and Diversity - Students who demonstrate understanding can:
 - (3-LS4-2.) Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.

- (3-LS4-3.) Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
- (3-LS4-4.) Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

Crosscutting Concepts (CCC): Patterns, Cause and Effect, Systems and System Model

Disciplinary Core Ideas (DCI): Growth and Development of Organisms, Natural Selection, Ecosystems, Dynamics, Functioning, and Resilience

Science and Engineering Practices (SEP): Developing and Using Models, Constructing Explanations and Designing Solutions

CCSS ELA Covered:

Reading

- RI.3.3 Describe the relationship between a series of scientific ideas/concepts
- RI.3.4 Determine the meaning of general academic words
- RI.3.7 Use information gained from illustrations
- RI.3.9 Compare/Contrast the most important points and key details of two text on same topic
- RF.3.3 Know and apply grade level phonics and word analysis skills in decoding words
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Speaking and Listening

- SL.3.1,.2. 3 Comprehension and Collaboration
- SL.3.4- Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant descriptive details, speaking clearly at an understandable pace.

Writing

- W.3.2 Write an informative piece
- W.3.3-6 Develop, organize, edit and publish, with support
- W.3.7-8 Conduct research and build knowledge on topic. Take notes from digital resources

Language

- L.3.1 Demonstrate command of the conventions of English in writing and speaking
- L.3.2 Demonstrate command of capitalization, punctuation, and spelling when writing

CCSS Mathematics Covered:

Measurement and Data

- MD. 3 Represent and interpret data; Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.
- MD.4 Generate measurement data by measuring lengths, using rulers, marked with halves and fourths of an inch.
- MD.8 Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measurements

Note: This module should take about 5 to 7 days

Understanding by Design NGSS Unit Plan	
Stage 1: Desired Results	
Understand <ul style="list-style-type: none"> • All living things are made up of parts that have specific functions. • Living things depend on their habitat to meet their basic needs. 	Essential Question(s) <ul style="list-style-type: none"> • How do the structures of living things allow them to meet their needs? • When investigating different systems, how does a habitat meet the needs of a species? Phenomenon: The Monarch Butterfly is the only butterfly to migrate. It is the only insect to migrate over 2,500 miles. Guiding Questions for this Module: <ul style="list-style-type: none"> • How does the Monarchs' structures affect their ability to migrate? • How do people affect the Monarch's migration?
Stage 2: Evidence/Assess	
Know <p>Students will gain an understanding about the Monarch Butterfly and how important its structures are to its migration and survival. They will also understand about the impact people make to this migration and why it is important we help and protect the Monarch Butterfly. They will also gain an understanding about the connection this has to other living species.</p>	Do <p>Students will create an explanatory model of the monarch butterfly highlighting the various parts of the butterfly and the role each part has in the life cycle and migration. The model should also provide an overview of how the butterfly interacts with its habitat.</p>

Suggested Vocabulary: migration, habitat, structure, species, systems

Stage 3: Learning Plan

Engage: Phenomenon. The Monarch Butterfly is the only butterfly to migrate.

CCC: Patterns

DCI: Growth and Development of Organisms, Natural Selection, Ecosystems, Dynamics, Functioning, and Resilience

Show the video clip of Monarch Butterflies (start at 1.30 into the video).

<https://youtu.be/adB638SIE1k>

Have students write down the guiding questions (see above) in their science notebooks. Group students in teams. Give them a chance to discuss the essential questions and have them write down their thoughts about those questions including anything they don't understand. After teams have discussed and written down their thoughts have a class discussion about the essential questions and what their thoughts and questions are and write those on chart paper to revisit later. This can be done in some form of an inquiry chart. You can title it Monarch Butterflies and have two columns: Questions and Observations.

Explore:

DCI: Growth and Development of Organisms, Natural Selection, Ecosystems, Dynamics, Functioning, and Resilience

SEP: Constructing Explanations and Designing Solutions

CCC: Cause and Effect, Systems and System Models

Play the Game: Oh Monarch! (Adapted from the game Oh Abalone!)

- Directions are attached

Students play about 10 rounds of the game. The rounds are tracked, and a graph is created to view the pattern of survival the Monarch has depending on the availability of fresh water, food, and a safe habitat. The human factor is introduced into the game at the end in an effort to show how human interference can either help or hinder the Monarch's survival. After the game, have teams discuss the outcomes as recorded on the chart. They can then work on answering the questions on the Monarch Butterfly Conclusion page (attached as well).

Explain:

DCI: Growth and Development of Organisms, Natural Selection, Ecosystems, Dynamics, Functioning, and Resilience

CCC: Patterns

Teams will need to do research about the Monarch Butterfly. They should also write down and discuss the guiding questions as these will drive their research. They will need to research the parts of the butterfly and how each part affects the butterfly's life cycle, migration and survival. Teams also need to include information about any patterns they see about the butterfly's migration and habitat as well as it relates to a system. Suggestion: Teams can use the Thinking Map Double Bubble to compare and contrast the Monarch and other types of butterflies. Suggested books about butterflies, migration, and habitats: Habitats & environments (Sci A-Z), Urban Habitats (Sci A-Z), Butterfly Café (Sci A-Z), Butterfly Camp (Sci A-Z), The Butterfly Life Cycle (Sci A-Z), The Magic of Migration (Reading A-Z), Welcome Home Karner Blue Butterfly (Reading A-Z)

Teams will create a Discovery Ed board to document their information. They can view and add videos as well as text to explain their findings. These boards will then be used to help create the explanatory model. If you do not have Discovery Ed, teams can create a Power Point or FlipGrid video.

Elaborate:

SEP: Developing and Using Models

CCC: Systems and System Models

Teams will create a conceptual model (poster) highlighting the Monarch Butterfly and its body parts (structures) and how those structures affect its life cycle, migration and survival. The poster should also have an overview of the Monarch's habitat. The poster should include a title, labels, and some form of a diagram or chart. Teams can be creative and be allowed to document their research in a way they as a team decide as long as it meets the criteria.

Evaluate:

SEP: Develop and Using Models

DCI: Growth and Development of Organisms, Natural Selection, Ecosystems, Dynamics, Functioning, and Resilience

When the posters are done, have one team switch posters with another team. Give teams stickies. Each team will critique the other team's poster and give constructive feedback. They can write on stickies what they liked, any questions they have, or any suggestions. Encourage respectful and thoughtful feedback. Suggestion: Students can start their feedback by saying I wonder... or I noticed... Stickies can then be placed next to the area they have the comment. When done have teams switch back and teams can review the comments and make any revisions if they like. Teams can then present their Discovery Ed boards and their models to the class as a way to explain their findings. This can be done in a variety of ways. Suggestion: Teams can do a stay or stray activity where one member of the team "stays" and is the expert. The other members "stray" and visit the other teams' models. The experts explain their findings to the other team members as they rotate to each team. As a class revisit the chart made earlier on their thoughts and questions. Update the chart to reflect their learning after this module. Students' understanding of the performance expectations can be assessed by giving students the CER assessment form and using the rubric for scoring team posters.

Stage 4: Transfer

Knowledge Transfer

Crosscutting Concepts:

Patterns: Patterns of change can be used to make predictions, The Monarch's migratory path

Cause and Effect: Cause and effect relationships are routinely identified and used to explain change- How do human beings impact the Monarch's migration?

Systems and system models: A system can be described in terms of its components and their interactions- The structures of the Monarch and how they work together to act as a system to help the Monarch's migration.

These Crosscutting concepts will help students make sense of the Monarch Butterfly's structures, life cycle and migration. Encourage students to recognize other species and how these crosscutting concepts help explain their life cycle. Challenge them to see the comparison to human beings.