

Subject: Science-6

Unit: Environmental Changes

Part I: Clarity of Learning Targets

What are the grade level indicators that go with this unit? Place a star next to the grade level indicators that are Power Indicators. Are the indicators in student friendly language? Place the level of Bloom's Taxonomy next to each Power Indicator.

Explain how the number of organisms an ecosystem can support depends on adequate biotic (living) resources (e.g., plants, animals) and abiotic (non-living) resources (e.g., light, water and soil).

#1 Student-Friendly: I can explain how biotic and abiotic resources determine the number of organisms in an ecosystem. (Procedural, Understand)

"Branches of Learning":

- Biotic
- Abiotic
- Limiting factors
- Organism
- Ecosystem

Summarize the ways that natural occurrences and human activity affect the transfer of energy in Earth's ecosystems (e.g., fire, hurricanes, roads and oil spills).

#2 Student-Friendly: I can summarize the ways that natural occurrences (fire, hurricanes, etc.) and human activity (deforestation, oil spills, etc.) affect the transfer of energy in ecosystems. (Procedural, Understand)

"Branches of Learning":

- Natural occurrence
- Human activities
- Transfer of energy

Explain that some environmental changes occur slowly while others occur rapidly (e.g., forest and pond succession, fires and decomposition).

#3 Student-Friendly: I can explain that some environmental changes occur slowly, while others occur rapidly (fires, decomposition, and succession.) (Conceptual, Understand)

"Branches of Learning":

- Decomposition
- Primary succession
- Secondary Succession
- Climax community

Explain the biogeochemical cycles, which move materials between the lithosphere (land), hydrosphere (water) and atmosphere (air).

#4 Student-Friendly: I can explain biogeochemical cycles.

“Branches of Learning”:

- Biogeochemical cycles
- Lithosphere
- Hydrosphere
- Atmosphere
- Oxygen cycle
- Carbon cycle
- Nitrogen cycle

What are the Big Ideas that go with this unit?

1. Living and non-living resources determine the number of organisms and ecosystem can support.
2. Human and/or natural activities change the environment and affect the transfer of energy.

What are the Essential Questions that go with this unit?

1. How do living and non-living resources determine the number of organisms an ecosystem can support?
2. How do human activities and natural resources change the environment and affect the transfer of energy?

What strategies will we use in order to make learning targets clearer for all students, before, during and after instruction? How will you communicate the learning indicators to students?

- Learning targets posted in the classroom – discussed with students before, during, after lessons
- Leaves of learning – each branch states a key term, students show ‘evidence’ of their learning on a leaf
- Big idea or essential question discussed throughout the unit – learning targets are connected to Big Ideas/Essential Questions

Part II: Feedback and Assessments (Formative and Summative)

How will we provide students with feedback throughout the unit?

What formative assessments will we use? (Non-graded assignments that check for understanding and provide feedback to the students) Incorporate the 7 Strategies of Assessment for Learning here.

- Leaves of learning – entrance/exit slip – students show evidence of learning – use of strong student examples
- Analyzing results of a summative assessment (correcting mistakes ½ sheet)
- Learning chains (food chain/webs) – entrance/exit slip – students show evidence of learning
- Section assessments in textbook - section 1 ½ sheet (pg. 10)
- Feedback on the entrance/exit slips – teacher lists criteria; students evaluate exit/entrance slips and identify one correct part of the answer (star), one incorrect part of the answer (stair), and one idea that needs to be added (stair). Students then add to/correct their answer.

How will students be involved with keeping track of their own learning progress (note—this is different than tracking points for a grade)?

- Students keep entrance/exit slips and can refer to them throughout the unit
- Students can refer to the feedback (stars and stairs) that was provided by peers and make corrections or additions

What summative assessments will we use? (Graded, evaluative assessments)

- Quiz #1 – Learning target #1: ecosystems, habitats, communities, populations, organisms, biotic, abiotic, and limiting factors
- Quiz #2 – Learning target #3: Succession (chapter 1, section 4)
- Quiz #3 – Learning target #2: Food chains/webs, transfer of energy
- Quiz #4 – Learning target #4: Cycle – O₂, C, N
- Quiz #5 – Learning target #1: Biogeography
- Biome Poster/Presentation – Learning target #1

Part III: Instruction and Student Activities

What instructional and student activities will we use for this unit? These activities should directly align with the indicators and assessments.

Background

- Ecosystems
- Habitats
- Communities
- Populations
- Organisms

Chapter 1, Section 1

- Smart Board presentation
- Section 1 assessment

Chapter 1, Section 4 (Succession)

Topics:

- Biotic
- Abiotic
- Limiting factors
- Succession (chapter 1, section 4)

Activities:

- Anticipation guide
- Worksheet – Pgs. 74 and 75

Chapter 2

Topics:

- Food chains/webs
- Transfer of energy
- Cycle – O₂, C, N
- Biogeography
- Biomes

Activities – Chapter 2, Section 1:

- Learning chains (formative)
- Energy pyramid
- Food chains and webs united streaming video
- 2-column notes
- Website – create a food web (extra-credit)

Activities – Chapter 2, Section 2:

- Cycle cartoon
- Carbon and nitrogen cycle worksheets
- Pg. 52 – Nitrogen cycle roles

Activities – Chapter 2, Section 3:

- Section 3 assessment – 57

Activities – Chapter 2, Section 4 and 5 (Biomes):

- Biome Project (posters)

Biotic, Abiotic	Ecosystems	Food Chains/webs, transfer of energy, succession
Limiting factors	Habitats	
	Communities	
	Population	
	Organisms	