Course – Grade 6 Science
Unit # 1 Life Science

Grade 6
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Unit #1 9/5/17 – 12/1/17

Section 1	Section 2	Section 3
Chapter 1- 14 days	Chapter 3 – 9 days	Chapter 5 – 5 days
Chapter 2 – 7 days	Chapter 4 – 8 days	

In addition to the inquiry and STEM activities – teachers should introduce the Science Fair project at the end of September and dedicate a minimum or 1 day every other week during the months of October and November to student projects. (BPS Science Fair Template is located in Science Teacher Resources.)

DBA # 1 12.04.17 – 12.08.17

Unit Overview: Students will understand and apply scientific concepts, principles and theories pertaining to the living environment setting and recognize the historical development /multicultural involvement of the ideas in science. Main ideas include: Living things are alike yet different, structures in living things are related to their function and living things interact with their environment.

NYSSLS Performance Expectations MS

Section 1: Growth Development and Reproduction of Organisms - Chapter 1 & 2

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants, respectively. [Clarification Statement: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds, and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.]

MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. [Clarification Statement: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include the genes responsible for size differences in different breeds of dogs. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds.] [Assessment Boundary: Assessment does not include genetic mechanisms, gene regulation, biochemical processes, or natural selection.]

Section 2: Matter and Energy in Organisms and Ecosystems -Chapter 3 & 4

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. [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.]

MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. [Clarification Statement: Emphasis is on describing the conservation of matter and flow of energy associated with ecosystem, and on defining the boundaries of the ecosystem.] [Assessment Boundary: Assessment does not include the use of chemical reactions to describe the processes.]

MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about shifts in populations due to changes in the ecosystem.]

Section 3: Interdependent Relationships in Ecosystems - Chapter 5

MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms in a variety of ecosystems. [Clarification Statement: Emphasis is on predicting patterns of interactions such as competition, predation, mutualism, and parasitism in different ecosystems in terms of the relationships among and between organisms.]

MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and protecting ecosystem stability.* [Clarification Statement: Examples of ecosystem protections could include water purification, waste management, nutrient recycling, prevention of soil erosion, and eradication of invasive species. Examples of design solution constraints could include scientific, economic, and social considerations.]

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts

Grade 6 Unit I Life Science

Engaging in Argument from Evidence
- Use an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem (MS_LS1-4)

Constructing Explanations and Designing Solutions
- Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the student's own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future (MS-LS1-5)

Analyzing and Interpreting Data
- Analyze and interpret data to provide evidence for phenomena (MS-LS2-1)

Developing and Using Models
- Develop a model to describe phenomena (MS-LS2-3)

Engaging in Argument from Evidence
- Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-LS2-4)

Constructing Explanations and Designing Solutions
- Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena (MS-LS2-2)

Engaging in Argument from Evidence
- Evaluate competing design solutions based on jointly developed and agreed upon design criteria (MS-LS2-5)

LS1.B: Growth and Development of Organisms
- Animals engage in characteristic behaviors tha tincrease the odds of reproduction (MS-LS1-4)
- Plants reproduce in a variety of ways; sometimes depending on animal behavior and specialixed features for reproduction (MS-LS1-4)
- Genetic factors as well as local conditions affect the growth of the adult plant (MS-LS1-5)

LS2.1A Interdependent Relationships in Ecosystems
- Organisms, and populations of organisms are depenent on their environmental interactions both with other living things and with nonliving factors (MS-LS2-1)
- In any ecosystem, organisms and popukations with similar requiremments for food, water, oxygen, and other resources may compete with each other for mimited resources, access to which consequently constrains their growth and reproduction (MS-LS2-1)
- Growth of organisms and population increases are limited by access to resources (MS-LS2-1)

LS2.B Cycle of Matter and Energy Transfer in Ecosystems
- Food webs are models that demonstrates how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plan or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms tha tmake up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the exosystem (MS-LS2-3)

LS2.C: Ecosystem Dynamics, Functioning, and Recillience
- Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an exosystem can lead to shifts in all its populations (MS-LS2-4)

LS2.A: Interdependent Relationships in Ecosystems
- Simmilarly, predatory interactions may reduce the number of organisms or eliminate whole populationsof organisms. Mutually beneficial interactions , in contrast, may become so interdependent that each organism requires the other for survival. Although the spedies involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and noliving, are shared (MS-LS2-2)

LS2.C Ecosystem Dynamics, Functioning, and Resilience
- Biodiversity describes the variety of species foundin Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5)

LS 4.D Biodiversity and Humans
- Changes in biodiversity can influence humans' resources, such as food, energy, and medicins, as well as exosystem services that humans rely on – for example, water purification and recycling. (MS-LS2-5)
- Humand ipact biodiversity both positively and negatively (MS-LS2-5)

ETS1.B Developing Possible Solutions
- There are systematic processes for evaluating solutions with respoect to how

Cause and Effect
- Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS1-4) (MS-LS1-5)
- Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-LS2-1)

Energy and Matter
- The transfer of energy can be tracked as energy flows through a natural system. (MS-LS2-3)

Stability and Change
- Small changes in one part of a system might cause large changes in another part. (MS-LS2-4) (MS-MS2-5)

Patterns
- Patterns can be used to identify cause and effect relationships (MS-LS2-2)

	well they have meet the criteria and constraints of a problem (MS-LS2-5)	

Section 1: Growth Development and Reproduction of Organisms

Common Core State Standards Connections:

ELA/Literacy –

RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-4),(MS-LS1-5),*(MS-LS3-1),(MS-LS3-2),*(MS-LS4-5)
RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. *(MS-LS1-5)*
RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics. *(MS-LS3-1),(MS-LS3-2)*
RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS3-1),(MS-LS3-2)
RI.6.8	Trace and evaluate the argument and specific claims in a text, distinguishing claims that are supported by reasons and evidence from claims that are not. (MS-LS1-4)
WHST.6-8.1	Write arguments focused on discipline content. (MS-LS1-4)
WHST.6-8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. *(MS-LS1-5)*
WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. *(MS-LS4-5)*
WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS1-5)
SL.8.5	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. *(MS-LS3-1),(MS-LS3-2)*
Mathematics –	
MP.4	Model with mathematics. *(MS-LS3-2)*
6.SP.A.2	Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. *(MS-LS1-4),(MS-LS1-5)*
6.SP.B.4	Summarize numerical data sets in relation to their context. *(MS-LS1-4),(MS-LS1-5)*
6.SP.B.5	Summarize numerical data sets in relation to their context. *(MS-LS3-2)*

Section 2: Matter and Energy in Organisms and Ecosystems

Connections to other DCIs in this grade-band: **MS.PS1.B** (MS-LS1-6),(MS-LS1-7),(MS-LS2-3); **MS.LS4.C** (MS-LS2-4); **MS.LS4.D** (MS-LS2-4); **MS.ESS2.A** (MS-LS1-6),(MS-LS2-3),(MS-LS2-4); **MS.ESS3.A** (MS-LS2-1),(MS-LS2-4); **MS.ESS3.C** (MS-LS2-1),(MS-LS2-4)

Articulation across grade-bands: **3.LS2.C** (MS-LS2-1),(MS-LS2-4); **3.LS4.D** (MS-LS2-1),(MS-LS2-4); **5.PS3.D** (MS-LS1-6),(MS-LS1-7); **5.LS1.C** (MS-LS1-6),(MS-LS1-7); **5.LS2.A** (MS-LS1-6),(MS-LS2-1),(MS-LS2-3); **5.LS2.B** (MS-LS1-6),(MS-LS1-7),(MS-LS2-3); **HS.PS1.B** (MS-LS1-6),(MS-LS1-7); **HS.PS3.B** (MS-LS2-3); **HS.LS1.C** (MS-LS1-6),(MS-LS1-7),(MS-LS2-3); **HS.LS2.A** (MS-LS2-1); **HS.LS2.B** (MS-LS1-6),(MS-LS1-7),(MS-LS2-3); **HS.LS2.C** (MS-LS2-4); **HS.LS4.C** (MS-LS2-1),(MS-LS2-4) ; **HS.LS4.D** (MS-LS2-1),(MS-LS2-4); **HS.ESS2.A** (MS-LS2-3); **HS.ESS2.D** (MS-LS1-6); **HS.ESS2.E** (MS-LS2-4); **HS.ESS3.A** (MS-LS2-1); **HS.ESS3.B** (MS-LS2-4); **HS.ESS3.C** (MS-LS2-4)

Common Core State Standards Connections:

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea. The text in the "Disciplinary Core Ideas" section is reproduced verbatim from A Framework for K-12 Science Education: Practices, Cross-Cutting Concepts, and Core Ideas unless it is preceded by (NYSED).

ELA/Literacy –

RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts. (MS-LS1-6),(MS-LS2-1),(MS-LS2-4)
RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. *(MS-LS1-6)*
RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-LS2-1)
RI.8.8	Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. (MS-LS2-4)
WHST.6-8.1	Write arguments to support claims with clear reasons and relevant evidence. (MS-LS2-4)
WHST.6-8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS1-6)
WHST.6-8.9	Draw evidence from informational texts to support analysis, reflection, and research. (MS-LS1-6),(MS-LS2-4)
SL.8.5	Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. *(MS-LS1-7),(MS-LS2-3)*
Mathematics –	
6.EE.C.9	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *(MS-LS1-6),(MS-LS2-3)*

Section 3: Interdependent Relationships in Ecosystems

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Connections to other DCIs in this grade-band: **MS.LS1.B** (MS-LS2-2); **MS.ESS3.C** (MS-LS2-5)	
Articulation across grade-band: **1.LS1.B** (MS-LS2-2); **HS.LS2.A** (MS-LS2-2),(MS-LS2-5); **HS.LS2.B** (MS-LS2-2); **HS.LS2.C** (MS-LS2-5); **HS.LS2.D** (MS-LS2-2);.**LS4.D** (MS-LS2-5); **HS.ESS3.A** (MS-LS2-5); **HS.ESS3.C** (MS-LS2-5); **HS.ESS3.D** (MS-LS2-5)	
Common Core State Standards Connections:	
ELA/Literacy –	
RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts. (MS-LS2-2)
RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text. (MS-LS2-5)
RI.8.8	Trace and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient to support the claims. (MS-LS2-5)
WHST.6-8.2	Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. (MS-LS2-2)
WHST.6-8.9	Draw evidence from literary or informational texts to support analysis, reflection, and research. (MS-LS2-2)
SL.8.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly. *(MS-LS2-2)*
SL.8.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation. *(MS-LS2-2)*
Mathematics –	
MP.4	Model with mathematics. *(MS-LS2-5)*
6.RP.A.3	Use ratio and rate reasoning to solve real-world and mathematical problems. *(MS-LS2-5)*
6.SP.B.5	Summarize numerical data sets in relation to their context. *(MS-LS2-2)*

Essential Questions/Big Questions

1. How do you know a plant when you see it
2. How do living things effect one another?
3. How do energy and matter move through ecosystems?
4. How do natural and human activities change ecosystems?

Resources

Pearson Interactive Science Book Chapters 1-5
PearsonRealize.com
Buffalo Science Material team kits
Pearson Lab materials
http://ngss.nsta.org/Classroom-Resources.aspx

http://newyorkscienceteacher.com/sci/

Chapter 1 Plants

Content Vocabulary – Chapter 1

Lesson 1 chlorophyll, photosynthesis, tissue, chloroplast, vacuole, cuticle, vascular tissue
Lesson 2 nonvascular plant, rhizoid, vascular plant, phloem, xylem, frond, pollen, seed, gymnosperm, angiosperm, cotyledon, monocot, dicot
Lesson 3 root cap, cambium, stoma, transpiration, embryo, germination, flower, pollination, sepal, petal, stamen, pistil, ovary
Lesson 4 sporophyte, gametophyte, annual, biennial, perennial, fertilization, zygote, cone, ovule, fruit
Lesson 5 tropism, hormone, auxin, photosynthesis, critical night length, short-day plant, long-day plant, day-neutral plant, dormancy

Breaking Down Definitions
SUTW 4th Edition p. 212
SUTW Tools S3-2a-b, S3-1a

Scenario Investigation – Plants in Space
Inquiry Path

Lesson 1 What is a Plant?
Skills
Reading: Compare and Contrast
Inquiry: Predict
Lab Zone

- Inquiry Warm up – What do leaves reveal about plants?
- Quick Lab – Algae and Other Plants
- Teacher Demo – Colorful Carnations
- Quick Lab – Local Plant diversity

Lesson 2 Classifying Plants
Skills
Reading: Outline
Inquiry: Communicate
Lab Zone

- Inquiry Warm up – Will mosses absorb water?
- Quick Lab – Masses of Mosses
- Build Inquiry – How quickly can water move upward?; Interpreting Data on Gymnosperms
- Quick Lab – Examining a Fern; Common Characteristics

Lesson 3 Plant Structures
Skills
Reading: Relate Cause and Effect
Inquiry: Observe
Lab Zone

- Inquiry Warm up – Which plant part is it?
- Teacher Demo – Observing Tree Rings
- Do the Lab Investigation – Investigating Stomata
- Quick Lab – The In-Seed Story; Modeling Flowers

Lesson 4 Plant Reproduction
Skills
Reading: Summarize
Inquiry: Infer
Lab Zone

- Inquiry Warm up – Make the Pollen Stick
- Quick Lab – Plant Life Cycles; Where are the Seeds?
- Build Inquiry – Design a Garden; The Scoop on Cones

Lesson 5 Plant Responses and Growth
Skills
Reading: Relate Text and Visuals
Inquiry: Draw Conclusions
Lab Zone

- Inquiry Warm up – Can a plant respond to touch?
- Quick Lab – Watching Roots Grow; Seasonal Changes

Lesson 6 SKIP

Chapter 2 Animals

Content Vocabulary – Chapter 2
Lesson 5 larva, polyp, medusa, external fertilization, internal fertilization, gestation period
Lesson 6 amniotic egg, placenta, metamorphosis, complete metamorphosis, pupa, incomplete metamorphosis, nymph, tadpole

Scenario Investigation – Mealworm Migration
Inquiry Path

Lesson 5 Animal Reproduction and Fertilization
Skills
Reading: Compare and Contrast
Inquiry: Calculate
Lab Zone

- Inquiry Warm Up – Making More
- Teacher Demo – Variation and Selection
- Quick Lab – Types of Reproduction, Types of Fertilization

Lesson 6 Development and Growth
Skills
Reading: Summarize
Inquiry: Interpret Data
Lab Zone

- Inquiry Warm Up – Eggs-animation,
- Quick Lab – "Eggs-tra" Protection, Cycles of Life, To care or Not to Care
- Teacher Demo – Butterfly Life-Cycle

Chapter 3 Populations and Communities

Content Vocabulary Chapter 3
Lesson 1 – organism, habitat, biotic factor, abiotic factor, species, population, community, ecosystem, exology
Lesson 2 – birth rate, death rate, immigration, emigration, population density, limiting factory, carrying capacity
Lesson 3 – natural selection, adaptation, niche, competition, predation, predator, prey, symbiosis, mutation, commensalism, parasitism, parasite, host

Scenario Investigation – That Can't Possibly Work!
Inquiry Path

Lesson 1 Living Things and the Environment
Skills
Reading: Compare and Contrast
Inquiry: Draw conclusions
Lab Zone

- Inquiry Warm Up – What's in the Scene?
- Quick Lab – Organisms and Their Habitats, Organizing an Ecosystem
- Lab Investigation – World in a Bottle

Lesson 2 Populations
Skills
Reading: Relate Cause and Effect
Inquiry:
Lab Zone

- Inquiry Warm Up – Populations
- Build Inquiry – Calculating Growth Rate
- Quick Lab – Growing and Shrinking, Elbow Room

Lesson 3 Interactions Among Living Things

Skills
Reading: Relate Text and visuals
Inquiry: Classify
Lab Zone

- Inquiry Warm up – Can you hide a butterfly?
- Quick Lab – Adaptations for Survival, Competition and Predation, Types of Symbiosis
- Build Inquiry – Observe an Insect-Eating plan

Chapter 4 Ecosystems and Biomes

Content Vocabulary Chapter 4
Lesson 1 producer, consumer, herbivore, carnivore, omnivore, scavenger, decomposer, food chain, food web, energy pyramid, desertification
Lesson 2 evaporation, condensation, precipitation, nitrogen fixation
Lesson 3 biome, climate, desert, rain forest, emergent layer, canopy, understory, grassland, savanna, deciduous tree, boreal forest, coniferous tree, tundra, permafrost

Scenario Investigation/STEM Activity – River works
Inquiry Path

Lesson 1 Energy Flow in Ecosystems
Skills
Reading: Relate Text and Visuals
Inquiry: Classify
Lab Zone

- Inquiry Warm Up – Where did your dinner come from?
- Quick Lab – Observing Decomposition, Consequences of Human Activity
- Lab Investigation – Ecosystem Food Chains

Lesson 2 Cycles of Matter
Skills
Reading: Sequence
Inquiry: Infer
Lab Zone

- Inquiry Warm Up – Are you part of a cycle?
- Quick Lab – Following Water, Carbon and Oxygen Blues

Lesson 3 Biomes
Skills
Reading: Compare and Contrast
Inquiry: Draw conclusions
Lab Zone

- Inquiry Warm Up – How much rain is that?
- Build Inquiry – Make models of a deciduous forest, Draw mountain habitats
- Quick Lab – Inferring Forest Climates

Lesson 4 SKIP

Chapter 5 Balance Within Ecosystems

Content Vocabulary Chapter 5
Lesson 1 succession, primary succession, pioneer species, secondary succession
Lesson 2 resources, greenhouse effect

Lesson 3 biodiversity, keystone species, extinction, endangered species, threatened species, habitat destruction, habitat fragmentation, poaching, captive breeding
Lesson 4 biogeography, continental drift, dispersal, exotic species

Scenario Investigation Fantasy Food Chain
Inquiry Path

Lesson 1 Changing Ecosystems
Skills
Reading: Compare and contrast
Inquiry: Observe
Lab Zone

- Inquiry Warm Up – How Communities Change
- Quick Lab – Primary or Secondary?
- Lab Investigation – How is survival dependent on the exosystem?

Lesson 2 Humans and the Environment
Skills
Reading: Relate Cause and Effect
Inquiry: Observe
Lab Zone

- Inquiry Warm Up – Do you interact with your environment?
- Quick Lab – How do humans impact ecosystems? Technology and the Environment

Lesson 3 Biodiversity
Skills
Reading: Compare and Contrast
Inquiry: Calculate
Lab zone

- Inquiry Warm up – How much variety is there?
- Quick Lab – Modeling Keystone Species; Grocery Gene Pool, Humans and Biodiversity;

Lesson 4 Biogeography
Skills
Reading: Relate Cause and Effect
Inquiry: Predict
Lab Zone

- Inquiry Warm Up – How can you move a seed?
- Quick Lab – Relating Continental Drift to Dispersal

Higher Level Questions
Chapter 1

- What characteristics do all plants share?
- What do plants need to live successfully on land?
- What are the characteristics of non-vascular plants?
- What are the characteristics of seedless vascular plants?
- What are the characteristics of seed plants?
- What are the functions of roots, stems, and leaves?
- How do seeds become new plants?
- What are the structures of a flower?

- What are the stages of a plant life cycle?
- How do plants reproduce?
- What are three stimuli that produce plant responses?
- How do plants respond to seasonal changes?

Chapter 2

- How do animals reproduce?
- How do external and internal fertilization differ?
- Where do embryos develop?
- How do young animals develop?
- How do animals care for their young?

Chapter 3

- What does an organism get from its environment?
- What are the two parts of an organism's habitat?
- How is an Ecosystem organized?
- How do populations change in size?
- What factors limit population growth?
- How do adaptations help an organism survive?
- What are competition and predation?
- What are the three types of symbiosis?

Chapter 4

- What are the energy roles in an ecosystem?
- How does energy move through an ecosystem?
- How do human activities affect ecosystems?
- What processes are involved in the water cycle?
- How are the carbon and oxygen cycles related?
- How does nitrogen cycle through ecosystems?
- What are the six major Biomes?

Chapter 5

- How do ecosystems change over time?
- How do changes in ecosystems affect the survival of organisms?
- What resources do humans obtain from ecosystems?
- How do human activities affect ecosystems?
- What is biodiversity's value?
- What factors affect biodiversity?
- How do humans affect biodiversity?
- What factors affect species dispersal?

Measurement of Student Learning

- Lesson Quiz
- Exam view Assessments
- Performance expectation activities
- Performance assessment
- Review and Assessment
- Assess your Understanding

Step Up to Writing

SUTW Strategy

Explore Activities

Easy 2-Column Notes

SUTW 4th Edition p. 31

SUTW Tools S1-17a-c

Content Vocabulary

Breaking Down Definitions

SUTW 5th Edition p. 212

SUTW Tools S3-2a-b, S3-1a

STEM Activity

IVF Summary Sentences

SUTW 4th Edition p. 43

SUTW Tools S1-23b

STEM Activity

Four Step Summary Paragraph

SUTW 4th Edition p. 44

SUTW Tools S1-24a-b

Investigate it! and Inquiry:

Color-Coding the Elements of Informative

SUTW 4th Edition p. 268

SUTW Tools S4-1a-b

Elaborate: Science Notebook

Explanatory Writing Informal Outlines

SUTW 4th Edition p. 272

SUTW Tools S4-3a-b, S4-4a,b

ELL Enhancements

Listening	Speaking	Reading	Writing	Accommodations
Build Background Knowledge Audio	Sentence Frames Academic conversation Starters	Supplementary Texts Visual Aids Video Standards-based questions	Sentence Frames Graphic Organizers Standards-based sentence stems	Extended time Directions read 3x Oral interpretation Translated version of test (may have both English and other) Responses in home language

Special Education Modifications

Instructional	Assistive technology	Assessment:	
Pre-teach vocabulary Use picture vocabulary Picture examples of safety measures posted Pictures for each category of science Scaffold Depth of Knowledge questions	Computer for lengthy writing tasks Audio textbook Videos to clarify concepts Recording device to record class lecture/discussions **Other**	Scaffold written assignments Individual criteria for success Provide with review packet Modify the number of questions Provide model of the task Provide multiple options for project	

Provide copy of notes/notes in ”cloze” form Peer partner Extended time for written tasks/verbal response Break long tasks over multiple days Allow for multiple ways to respond (verbal, written, response board, scribe) Provide mock/model of performance task Model use of graphic organizers (fade until mastery) Modify informational text to shorter passages Provide model of exemplar lab write-up Provide interactive notebook Present complex tasks in multiple ways Model steps to read, interpret, and construct graphs Multiple opportunities to perform to repeat labs Provide advance organizer of class tasks	Arrange seating for maximum engagement and minimum distraction Accessible lab space (counter level)	Practice calculating density with sample problem before assessing student.	

Culturally and Linguistically Responsive Teaching (CLRT) in the Science Classroom

- Materials, resources, and/or discussions address diverse cultural backgrounds and real world applications
- Artifacts (posters, charts, etc.) in the science classroom are representative of the cultures of the student population
- All students are given an opportunity to engage in science discourse
- Teacher demonstrates high expectations for all students