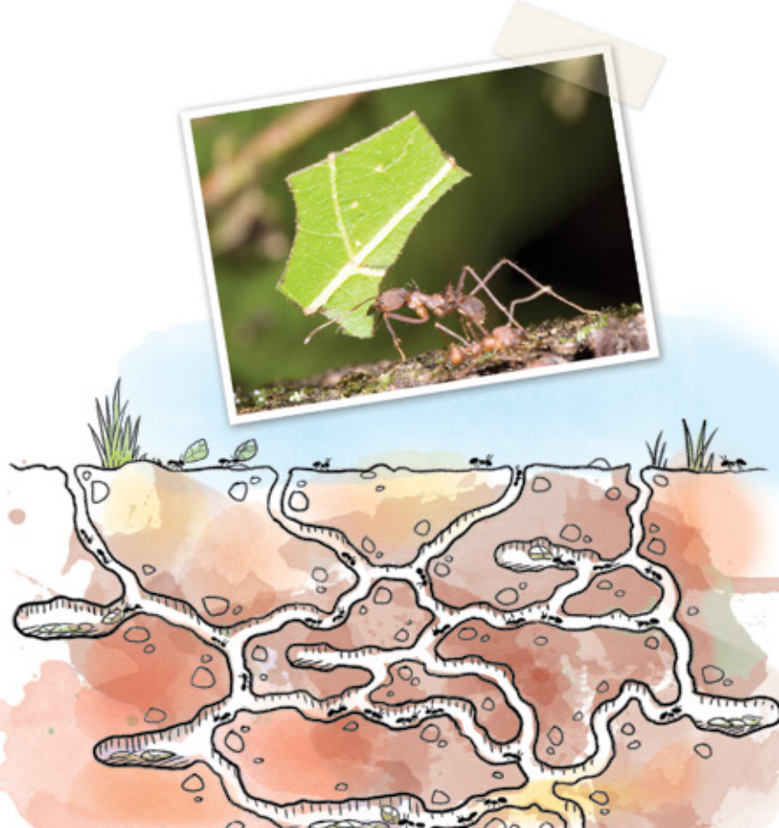
Teacher's Edition

Grade 3 • Unit 3

Inspire Science

Different Environments



Mc Graw Hill Education

Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

Performance Expectations	MODULE: **Survive the Environment**	MODULE: **Change of Environments**
3–5-ETS1-1		●
3–5-ETS1-3	●	
3-LS3-2	●	
3-LS4-1		●
3-LS4-3	●	●
3-LS4-4		●

Correlations by Module to the NGSS

MODULE: Survive the Environment

3–5-ETS	Engineering Design	
3–5-ETS1-3	**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**	*8–9, 11–12. 26–28, 31, 38–39, 43–46*
SEP Science and Engineering Practices		
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. • Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3–5-ETS1-3)		*8–9, 11–12, 43–46*
DCI Disciplinary Core Ideas		
ETS1.B: Developing Possible Solutions • Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3–5-ETS1-3)		*11–12, 38–39, 45–46*
ETS1.C: Optimizing the Design Solution • Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3–5-ETS1-3)		*11–12 26–27, 31, 38–39, 45–46*

Inquiry activities are in Italics.

3-LS3	Heredity: Inheritance and Variation of Traits	
3-LS3-2	**Use evidence to support the explanation that traits can be influenced by the environment.** *[Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and a pet dog that is given too much food and little exercise may become overweight.]*	*8–9*, *11–12*, 30, 32–34, *45–46*
SEP Science and Engineering Practices		
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. • Use evidence (e.g., observations, patterns) to support an explanation. (3-LS3-2)		5, *8–9*, 10, 14, 21
DCI Disciplinary Core Ideas		
LS3.A: Inheritance of Traits • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. (3-LS3-2)		*8–9*, *11–12*, 14, 21
LS3.B: Variation of Traits • The environment also affects the traits that an organism develops. (3-LS3-2)		*8–9*, 21, 32–34, *26–28*, *38–39*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS3-2)		*8–9*, *11–12*, 14, 21

3-LS4	Biological Evolution: Unity and Diversity	
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.** *[Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]*	14, 16–17. 36, 38, *38–39*, *45–46*

Inquiry activities are in Italics.

SEP Science and Engineering Practices	
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Construct an argument with evidence. (3-LS4-3)	29, 35, *38–39*
DCI Disciplinary Core Ideas	
LS4.C: Adaptation • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	*31*, 32–34, 36, *38–39*, 41, *43–46*
CCC Crosscutting Concepts	
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)	*26–28*, 30, *31*, 36, *38–39*, 41

Other Correlations	
CCSS Math Connections	
3.MD.B.4	*26–27*
ELD Connections	
ELD.PI.3.10	*11–12*, 15, 18–19, 33, 36, *38–39*, 40, *43–46*
CCSS ELA/Literacy Connections	
RI.3.7	14, 36
SL.3.1-3.3	*8–9*, *38–39*, *46*
ALSO INTEGRATES:	
3–5-ETS1-1	39–*40*, *44–48*
SEP Analyzing and Interpreting Data	*8*–9, *11–12*, *26–28*
SEP Constructing Explanations and Designing Solutions	23, *28*, 29, *38–39*, *45–46*
SEP Obtaining, Evaluating, and Communicating Information	*8–9*, *11–12*, *26–28*, *38–39*, *43–46*

Inquiry activities are in Italics.

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SEP Planning and Carrying Out Investigations	*26–28*, *37*, *38–39*
DCI LS2.C	*11–12*, 14, 16–17, 34, 38, *38–39*, 41
DCI LS4.D	14, 32–34, *43–46*
CCC Patterns	*8–9*
CCC Scale, Proportion, and Quantity	*11–12*, 15, *43–46*
CCC Systems and System Models	10, 13, 15, *38–39*, *43–46*
Math 3.MD.B.3	*11*
ELD.PI.3.1	*8–9*, 16–17, *38–39*, *43–46*
ELD.PI.3.10	*11–12*, 15, 18–19, 33, 36, *38–39*, 40, *43–46*
ELD.PI.3.11	*8–9*, *11–12*, 15, 18–19, 20, 37, *38–39*, *43–46*
ELA RI.3.1	10, 13, 16–17
ELA RI.3.3	*11–12*, 15, 36, *38–39*, *43–46*
ELA W.3.1	*11–12*, 15, 36, *38–39*, *43–46*
ELA W.3.7	*11–12*

MODULE: Change the Environment

3–5-ETS	Engineering Design	
3–5-ETS1-1	**Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**	77, 81, *85–90*
SEP Science and Engineering Practices		
Asking Questions and Defining Problems Asking questions and defining problems in 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. • Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3–5-ETS1-1)		81, *85–90*

Inquiry activities are in Italics.

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DCI Disciplinary Core Ideas	
ETS1.A: Defining and Delimiting Engineering Problems • Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3–5-ETS1-1)	77, 81, *85–90*
CCC Crosscutting Concepts	
Influence of Engineering, Technology, and Science on Society and the Natural World • People's needs and wants change over time, as do their demands for new and improved technologies. (3–5-ETS1-1)	*72*, 77, *85–90*

3-LS4	Biological Evolution: Unity and Diversity	
4-LS4-1	**Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.** *[Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.] [Assessment Boundary: Assessment does not include identification of specific fossils or present plants and animals. Assessment is limited to major fossil types and relative ages.] Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.*	*54–55*, 58, *59*, 60, *61*, 63, *64–65*, 67, *85–90*
SEP Science and Engineering Practices		
Analyzing and Interpreting Data Analyzing data in 3 -5 builds on K -2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. • Analyze and interpret data to make sense of phenomena using logical reasoning. (3-LS4-1)		*54–55*, *59*, *61*, *64–65*
DCI Disciplinary Core Ideas		
LS4.A: Evidence of Common Ancestry and Diversity • Some kinds of plants and animals that once lived on Earth are no longer found anywhere. (Note: Moved from K -2.) (3-LS4-1) • Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. (3-LS4-1)		*54–55*, 56–58, *61*, *64–65*, 67, *85–90*

Inquiry activities are in Italics.

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CCC Crosscutting Concepts	
Scale, Proportion, and Quantity • Observable phenomena exist from very short to very long time periods. (3-LS4-1)	*54–55*, 56–57, *59*, *61*, 67
Scientific Knowledge Assumes an Order and Consistency in Natural Systems • Science assumes consistent patterns in natural systems. (3-LS4-1)	58, *59*, 60, 63, *64–65*, *85–90*

3-LS4	Biological Evolution: Unity and Diversity	
 **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.** *[Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]*	51, 58, 67, 69, 75–76, 78–79, *81*, *85–90*
SEP Science and Engineering Practices		
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Construct an argument with evidence. (3-LS4-3)		51, *59*, 73, 76, *77*, *81*, *88–90*
DCI Disciplinary Core Ideas		
LS4.C: Adaptation • For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)		67, 75–76, 78–79, *81*, *85–90*
CCC Crosscutting Concepts		
Cause and Effect • Cause and effect relationships are routinely identified and used to explain change. (3-LS4-3)		67, *72*, 74, 75–76, 77, 78–79, *81*, 82, *85–90*

Inquiry activities are in Italics.

3-LS4	Biological Evolution: Unity and Diversity	
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.*** *[Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.] [Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]*	*72*, 75–76, 77, *81*, *85–90*
SEP Science and Engineering Practices		
Engaging in Argument from Evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. (3-LS4-4)		73, 76, 77, *81*, *88–90*
DCI Disciplinary Core Ideas		
LS2.C: Ecosystem Dynamics, Functioning, and Resilience • 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)		*72*, 75–76, 77, 78–79, *81*, *85–90*
LS4.D: Biodiversity and Humans • Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)		*72*, 74–76, 77, 78–79, *81*, 83, *85–90*
CCC Crosscutting Concepts		
Systems and System Models • A system can be described in terms of its components and their interactions. (3-LS4-4)		74–76, 83, *85–90*
Connections to Engineering, Technology, and Applications of Science **Interdependence of Engineering, Technology and Applications of Science on Society and the Natural World** • Knowledge of relevant scientific concepts and research findings is important in engineering. (3-LS4-4)		*72*, 77, *85–90*

Other Correlations	
CCSS Math Connections	
MP. 2	*54*, *64*
MP.5	*54*
3.MD.B.3	*64–65*

Inquiry activities are in Italics.

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ELD Connections	
ELD.PI.3.1	Teacher's Edition *Only*: 66
ELD.PI.3.10	Teacher's Edition *Only*: *72*, 73, 82
ELD.PI.3.11	Teacher's Edition *Only*: *72*, 73
CCSS ELA/Literacy Connections	
RI.3.1, 3, 5, 7	56–57, 58, 60, *61*, 63, 74–76
SL.3.1	*59*, 79, *81*
W.3.1, 7	*72*, 77, *81*
ALSO INTEGRATES:	
CCC Patterns	*54–55*, *59*
Math 3.MD.B.2	*54–55*
ELD.PI.3.5	Teacher's Edition *Only*: 60
ELD.PI.3.6	Teacher's Edition *Only*: 58, 80
ELA W.3.2	57, 77

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