

Content Area: Science (NJSL-S) Grades K - 12
Grade: 4

Dev. Date:
Established 2016-2017
Revised 2018-2019
Revised 2019-2020
Revised 2020-2021
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Grade 4

Unit 8 Natural Resources and Hazards

New Jersey Learning Standards

Established 2016-2017
Revised 2018-2019
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Revised 2020-2021
Revised 2021-2022
Revised 2022-2023

Marking Period	Unit Title	Recommended Instructional Days
4	Natural Resources and Hazards	20
NJSLS - Science: <i>Title</i>	NJSLS - Science: <i>Performance Expectations</i>	Recommended Activities, Investigations, Interdisciplinary Connections, and/or Student Experiences to Explore NJSLS-S within Unit
Earth and Human Activity	<ul style="list-style-type: none"> 4-ESS3-1-Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. [Clarification Statement: Examples of renewable energy resources could include wind energy, water behind dams, and sunlight; non-renewable energy resources are fossil fuels and fissile materials. Examples of environmental effects could include loss of habitat due to dams, loss of habitat due to surface mining, and air pollution from burning of fossil fuels.] 	

	<ul style="list-style-type: none">● 4-ESS3-2- Generate and compare multiple solutions to reduce the impacts of natural Earth processes and climate change have on humans. [Clarification Statement: Examples of solutions could include designing an earthquake resistant building and improving monitoring of volcanic activity.] [Assessment Boundary: Assessment is limited to earthquakes, floods, tsunamis, and volcanic eruptions.]● 3-5-ETS1-1 Define a simple design problem reflecting a need or want that includes specific criteria for success and constraints on materials, time, or cost.● 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.	

<p>FOUNDATION Disciplinary: Core Idea</p>	<p>FOUNDATION Disciplinary: Statement</p>	
<ul style="list-style-type: none"> ● ESS3.A: Natural Resources ● ESS3.B: Natural Hazards ● ETS1.A: Defining and Delimiting Engineering Problems ● ETS1.B: Designing Solutions to Engineering Problems 	<ul style="list-style-type: none"> ● Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not. (4-ESS3- 1) ● A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts. (4- ESS3-2) (Note: This Disciplinary Core Idea can also be found in 3.WC.) ● Testing a solution involves investigating how well it performs under a range of likely conditions. (secondary to 4-ESS3-2) ● Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves 	<p><u>Essential Question/s:</u></p> <ul style="list-style-type: none"> ● What nonrenewable resources are used for energy? ● What renewable resources are used for energy? ● How does climate change affect human life? ● How can people reduce the impact of land and earth based hazards? ● How can people reduce the impact of climate change on humans? ● How can we follow the engineering design process to conduct scientific research? <p><u>Activity Description:</u></p> <ul style="list-style-type: none"> ● You Solve It- Solutions for Natural Hazards (Online Simulation) [21st Century, TECH, SS, ELA] ● Hands-On Activity- Catch That Dirt (Pages 540-542) [SCI, SEL, Climate Change, 21st Century, SS, ELA] ● Hands-On Activity- Running on Sunshine (Pages 564-566) [SCI, SEL, Climate Change, 21st Century, SS, MA, ELA, PE] ● Hands-On Activity- Reduce the Risk (Pages 586-590) [SCI, SEL, Climate Change, 21st Century, SS, MA, ELA, PE] ● Hands-On Activity- Is It Safe? (Pages 612-614) [SCI, SEL, Climate Change, 21st Century, SS, MA, ELA, PE] ● Lego We Do 2.0- Robust Structures [SCI, SEL, 21st Century, TECH, MA, SS] ● Lego We Do 2.0- Prevent Floods [SCI, SEL, Climate Change, 21st Century, TECH, MA, SS] ● Lego We Do 2.0- Drop and Rescue [SCI, SEL, 21st Century, TECH, MA, SS]

	<p>investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)</p>	<ul style="list-style-type: none"> • Lego We Do 2.0- Sort to Recycle [SCI, SEL, Climate Change, 21st Century, TECH, MA, SS] • Lego We Do 2.0- Hazard Alarm [SCI, SEL, Climate Change, 21st Century, TECH, MA, SS] • Lego We Do 2.0- Cleaning the Ocean [SCI, SEL, Climate Change, 21st Century, TECH, MA, SS] • Unit Project- Resource Debate [SCI, SEL, Climate Change, 21st Century, SS, ELA, MA, TECH] • Scientist Spotlight- Gladys West and Warren Washington [SCI, Climate Change, 21st Century] • Introduction to Scientific Research (Science Fair Practice) [SCI, 21st Century, TECH]
<p>FOUNDATION Science and Engineering Practices: <i>Core Idea</i></p>	<p>FOUNDATION Science and Engineering Practices: <i>Statement</i></p>	
<ul style="list-style-type: none"> • Cause and Effect • Interdependence of Science, Engineering, and Technology • Influence of Science, Engineering and Technology on Society and the Natural World 	<ul style="list-style-type: none"> • Cause and effect relationships are routinely identified and used to explain change. (4-ESS3-1) • Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS3-2) • Knowledge of relevant scientific concepts and research findings is important in engineering. (4-ESS3- 1) • Over time, people’s needs and wants change, as do their demands for new and improved technologies. (4-ESS3-1) • Plan and conduct an investigation collaboratively to produce data to serve as 	<p>Interdisciplinary Connections: Content: NJSL:</p> <p><i>Connections to NJSL – English Language Arts</i></p> <ul style="list-style-type: none"> • RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. (4-ESS3-2) • RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-ESS3-2) • W.4.7 Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-ESS3-1) • W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. (4-ESS3-1) • W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research. (4- ESS3-1)

	<p>the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-5-ETS1-3)</p>	<p><i>Connections to NJSL – Mathematics</i></p> <ul style="list-style-type: none"> • MP.2 Reason abstractly and quantitatively. (4-ESS3-1), (4-ESS3-2) • MP.4 Model with mathematics. (4-ESS3-1), (4-ESS3-2) • 4.OA.A.1 Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (4-ESS3-1), (4-ESS3-2)
<p>FOUNDATION Crosscutting Concepts: <i>Core Idea</i></p>	<p>FOUNDATION Crosscutting Concepts: <i>Statement</i></p>	
<ul style="list-style-type: none"> • Cause and Effect • Interdependence of Science, Engineering, and Technology • Influence of Science, Engineering and Technology on Society and the Natural World 	<ul style="list-style-type: none"> • Cause and effect relationships are routinely identified and used to explain change. (4-ESS3-1) • Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS3-2) • Knowledge of relevant scientific concepts and research findings is important in engineering. (4-ESS3-1) • Over time, people’s needs and wants change, as do their demands for new and improved technologies. (4-ESS3-1) 	

Social and Emotional Learning: <i>Competencies</i>	Social and Emotional Learning: <i>Sub-Competencies</i>		
<ul style="list-style-type: none"> • Responsible Decision-Making • Relationship Skills 	<ul style="list-style-type: none"> • Develop, implement, and model effective problem solving and critical thinking skills. • Identify the consequences associated with one’s actions in order to make constructive choices. • Evaluate personal, ethical, safety, and civic impact of decisions. • Utilize positive communication and social skills to interact effectively with others. 		
<p align="center">Assessments (Formative) <i>To show evidence of meeting the standard/s, students will successfully engage within:</i></p>		<p align="center">Assessments (Summative) <i>To show evidence of meeting the standard/s, students will successfully complete:</i></p>	
<p><u>Formative Assessments:</u></p> <ul style="list-style-type: none"> • Unit Pretest, Lesson Check, Lesson Roundup, Lesson Quiz, and student responses in Ebook. 		<p><u>Benchmarks:</u></p> <ul style="list-style-type: none"> • District Assessment <p><u>Summative Assessments:</u></p> <ul style="list-style-type: none"> • Unit 8 Performance Task- Avoiding Disaster (Pages 620-621) • Unit 8 Test • Written Reports based on hands-on activities and Lego WeDo 2.0 	

Differentiated Student Access to Content: Teaching and Learning Resources/Materials			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core Resources
<ul style="list-style-type: none"> ● HMH Workbook ● HMH Science Dimension Kits ● Lego WeDo 2.0 ● Student Chromebooks ● Video Based Projects for each Unit 	<ul style="list-style-type: none"> ● Text to Speech Tool on HMH E-Book ● Read-Along Highlight Tool on HMH E-Book ● Leveled Readers ● Vocabulary Card Game for each unit 	<ul style="list-style-type: none"> ● Multilingual Glossary on HMH Ed website 	<ul style="list-style-type: none"> ● Leveled Readers ● Lego WeDo 2.0 Extension Activities ● You Solve It Simulations ● 21st Century Skills-Technology and Coding
Supplemental Resources			
<p>Technology:</p> <ul style="list-style-type: none"> ● HMH E-Book ● Schoology ● Kahoot! ● Quizlet/Quizlet Live ● Quizizz ● Newsela ● Readworks ● NSTA Lesson Resource-Earth and Human Activity ● Study Jams (Click over Landforms, Rocks, and Minerals) ● You Solve it Simulations <p>Other:</p> <ul style="list-style-type: none"> ● Leveled Readers ● Lego WeDo 2.0 			

Differentiated Student Access to Content: Recommended <i>Strategies & Techniques</i>			
Core Resources	Alternate Core Resources <i>IEP/504/At-Risk/ESL</i>	ELL Core Resources	Gifted & Talented Core
<ul style="list-style-type: none"> ● Promote an approach that benefits multiple learning styles exploring phenomena through readings, videos, and collaborative projects. ● Establishing proper safety protocols for using specialized equipment and gathering materials. ● Establishing communication protocols for collaborative activities to ensure all students properly communicate and involve every student. ● Demonstrate that the Engineering Design Process is a flexible cycle that allows for steps to be repeated. 	<ul style="list-style-type: none"> ● Utilize a multi-sensory (VAKT) approach during instruction, provide alternate presentations of skills by varying the method (repetition, simple explanations, additional examples, modeling, etc.), modify test content and/or format, allow students to retake test for additional credit, provide additional times and preferential seating as needed, review, restate and repeat directions, provide study guides, and/or break assignments into segments of shorter tasks. 	<ul style="list-style-type: none"> ● Extend time requirements, preferred seating, positive reinforcement, check often for understanding/review, oral/visual directions/prompts when necessary, supplemental materials including use of an online bilingual dictionary, and modified assessment and/or rubric. 	<ul style="list-style-type: none"> ● Create an enhanced set of introductory activities, integrate active teaching/learning opportunities, incorporate authentic components, propose interest-based extension activities, and connect students to related talent development opportunities.
	Disciplinary Concept:		

<p>NJSLS CAREER READINESS, LIFE LITERACIES & KEY SKILLS</p>	<p><i>Core Ideas:</i></p>	<ul style="list-style-type: none"> ● Collaboration with individuals with diverse perspectives can result in new ways of thinking and/or innovative solutions. ● Curiosity and a willingness to try new ideas (intellectual risk-taking) contributes to the development of creativity and innovation skills. ● The ability to solve problems effectively begins with gathering data, seeking resources, and applying critical thinking skills.
	<p><i>Performance Expectation/s:</i></p>	<ul style="list-style-type: none"> ● 9.4.5.CI.1: Use appropriate communication technologies to collaborate with individuals with diverse perspectives about a local and/or global climate change issue and deliberate about possible solutions (e.g., W.4.6, 3.MD.B.3, 7.1.NM.IPERS.6). ● 9.4.5.CI.2: Investigate a persistent local or global issue, such as climate change, and collaborate with individuals with diverse perspectives to improve upon current actions designed to address the issue (e.g., 6.3.5.CivicsPD.3, W.5.7). ● 9.4.5.CI.3: Participate in a brainstorming session with individuals with diverse perspectives to expand one’s thinking about a topic of curiosity (e.g., 8.2.5.ED.2, 1.5.5.CR1a). ● 9.4.5.CI.4: Research the development process of a product and identify the role of failure as a part of the creative process (e.g., W.4.7, 8.2.5.ED.6). ● 9.4.5.CT.1: Identify and gather relevant data that will aid in the problem-solving process (e.g., 2.1.5.EH.4, 4-ESS3-1, 6.3.5.CivicsPD.2). ● 9.4.5.CT.2: Identify a problem and list the types of individuals and resources (e.g., school, community agencies, governmental, online) that can aid in solving the problem (e.g., 2.1.5.CHSS.1, 4-ESS3-1). ● 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems. ● 9.4.5.CT.4: Apply critical thinking and problem-solving strategies to different types of problems such as personal, academic, community and global (e.g., 6.1.5.Civics CM.3).

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	Career Readiness, Life Literacies, & Key Skills Practices
	<ul style="list-style-type: none"> Hands-on activities provide opportunities for creativity and innovation. Working in small groups will allow students to collaborate with classmates who possess diverse perspectives for innovative solutions. Also, collaboration will enhance their ability to gather data, discover resources, and apply critical thinking skills to solve real-world problems.

New Jersey Legislative Statutes and Administrative Code (place an "X" before each law/statute if/when present within the curriculum map)											
X	Amistad Law: <i>N.J.S.A. 18A 52:16A-88</i>		Holocaust Law: <i>N.J.S.A. 18A:35-28</i>		LGBT and Disabilities Law: <i>N.J.S.A. 18A:35-4.35</i>		X	Diversity & Inclusion: <i>N.J.S.A. 18A:35-4.36a</i>		X	Standards in Action: <i>Climate Change</i>