

Estell Manor School District Science Curriculum



Grade 5

Philosophy

The purpose of the Estell Manor School District Science Curriculum is to develop scientific understanding and civic efficacy (the readiness and willingness to assume citizenship responsibilities and to make informed and reasoned decisions for the public good as citizens). The New Jersey Student Standards for Science reflect the belief that all students can and must learn enough science to assume their role as concerned citizens, equipped with necessary information and decision-making skills.

The need for scientific literacy in today's increasingly technological world, for fundamental reforms in how science is taught, and for established standards in science education are by now well-known and documented. Presidential appeals for excellence, combined with expressions of concern from scientists and educators, have led to national, state, and local initiatives. New Jersey is host to an impressive array of scientific and technological industries, and should play a leadership role in the development and implementation of standards for the teaching and learning of science.

Pacing Guide

Unit	Time Frame
Unit 1: Engineering and Technology	15-20 Days
Unit 2: Matter	40-50 Days
Unit 3: Energy and Matter in Organisms	40-50 Days
Unit 4: Energy and Matter in Ecosystems	20-30 Days
Unit 5: Systems in Space	20-30 Days
Unit 6: Earth's Systems	20-30 Days
Unit 7: Earth and Human Activities	20-30 Days

Core Materials: Houghton Mifflin Harcourt Science Dimensions Textbook, NJSLS – Science Model Curriculum Grade 5

Unit 1 will address the following 21st Century Life and Careers skills:

21st Century Themes		Career Ready Practices	
9.1	Personal Financial Literacy		CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers	√	CRP2. Apply appropriate academic and technical skills.
	Money Management		CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management	√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing	√	CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer	√	CRP6. Demonstrate creativity and innovation.
	Civic Financial Responsibility	√	CRP7. Employ valid and reliable research strategies.

	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation		√	CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration		√	CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations
	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
	C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
	D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 1 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Obtaining, Evaluating, and Communicating Information	ESS3.C: Human Impacts on Earth Systems Human activities in agriculture,	Systems and System Models A system can be described in terms of its

Obtaining, evaluating, and communicating information in 3– 5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1) 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) 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)	industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1) 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) ETS1.B: Developing Possible Solutions Research on a problem should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2) At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2) Tests are often designed to identify failure points or difficulties, which suggest the elements of the design	components and their interactions. (5-ESS3-1) ----- ----- Connections to Nature of Science Science Addresses Questions About the Natural and Material World. Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1) 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) Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)
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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. Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2)	that need to be improved. (3-5-ETS1-3) 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)	
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Unit 1: Science / 5th Grade	Duration: 15-20 Days
Engineering and Technology	
Standards: 5-ESS3-1 - Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment. 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. 3-5-ETS1.2 - Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. 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.	

Unit Summary: Students will be exposed to engineering and technology in this unit. This unit has three lessons attached to it and should be completed in 15-20 Days. They will be able to discover how science and math are used in engineering, investigate a design process, and explore how technology decisions affect society.

NJ Student Learning Standards:

Interdisciplinary Skills

Primary Interdisciplinary Connections: Infused within the unit are connections to the NJSLs for Mathematics, Language Arts

NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

NJSLSA.W10. Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly

Technology

8.1.8.A.1 - Demonstrate knowledge of a real world problem using digital tools.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.

● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	
Essential Understanding	Essential Questions
<i>Students will understand that...</i> ● Science and math are used in engineering ● A design process requires finding good solutions to problems ● Technology affects society	● How are science and math used in engineering? ● What is the design process? ● How does technology affect society?
Evidence of Student Learning	
Performance Tasks: Activities to provide evidence for student learning of content and cognitive skills.	Other Assessments
● Students will redesign the front of the school to improve the way students are dropped off and picked up	Formative Assessments ● Interactive Notebook ● Performance Assessments ● Exit Slips Summative Assessments ● Tests ● Quizzes ● Hands-On Activities Benchmark Assessment

	● Beginning of the Year Benchmark ● Mid-Year Benchmark ● End of the Year Benchmark Alternative Assessments ● Teacher Observations ● Group Work/Class Work
Vocabulary brainstorming/constraint/criteria/deforestation/erosion/trade off	
Knowledge and Skills	
Content	Skills
<i>Students will know...</i> ● How science and math are used in engineering ● What the design process is ● How technology affects society	<i>Students will be able to...</i> ● Discover how science and math are used in engineering ● Investigate a design process ● Explore how technology decisions affect society
Instructional Plan	

Suggested Activities	Resources
- Test a solution to compare how much weight different bundles of straws can support - Build a scale model of a path that will allow people to safely walk up and down a steep path in a park - Develop criteria and constraints to design and create a balloon-powered car	- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature	
- HMH Science Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites	
	- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Modifications Special Education Students / 504 (<i>These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan</i>) reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge. English Language learners: <i>use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning</i>	

opportunities, use modeling, visual aids, and manipulatives.

Students at Risk of Failure: *Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.*

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

**For additional modifications and accommodations, see below*

English Language Learners

- Provide pictures and well labeled models
- Pre-teach vocabulary words
- Extended Time
- Less questions on a page for tests
- Modified Assignments

Gifted and Talented

- Higher level questioning
- Students design questions
- Higher level texts
- Peer tutoring
- Open ended questions to activate higher level thinking

Basic Skills/Economically Disadvantaged/Students at Risk

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Communication logs

Special Education/504

- Follow all IEP modifications/504 plan
- Provide student with specific graphic organizers to help them note take about the different levels of government
- Provide students with notes from the lesson and discussions
- Labeled pictures related to concepts
- Check in's during experiments to help refocus

Unit 2 will address the following 21st Century Life and Careers skills:

21st Century Themes		Career Ready Practices	
9.1	Personal Financial Literacy		CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers	√	CRP2. Apply appropriate academic and technical skills.
	Money Management		CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management	√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing		CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer	√	CRP6. Demonstrate creativity and innovation.
	Civic Financial Responsibility		CRP7. Employ valid and reliable research strategies.

	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation		√	CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration		√	CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	TECHNOLOGY STANDARDS 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations

	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
	C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 2 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model to describe phenomena. (5-PS1-1) 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	PS1.A: Structure and Properties of Matter Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1) The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2) Measurements of a variety of	Cause and Effect Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4) Scale, Proportion, and Quantity Natural objects exist from the very small to the immensely large. (5-PS1-1) Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1- 2),(5-PS1-3) ----- ----- Connections to Nature of Science Scientific Knowledge Assumes an Order and Consistency in Natural Systems

or design solutions. 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. (5-PS1-4) Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3) Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions. Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)	properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3) PS1.B: Chemical Reactions When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4) No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)	Science assumes consistent patterns in natural systems. (5-PS1-2)
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Unit 2: Science/5th Grade Matter	Duration: 40-50 Days
Standards: 5-PS1-1 - Develop a model to describe that matter is made of particles too small to be seen. 5-PS1-2 - Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.	

5-PS1-3 - Make observations and measurements to identify materials based on their properties.

Unit Summary: Students will be exposed to matter. This unit has three lessons attached to it and should be completed in about 40-50 Days. They will be able to discover the different states of matter and how to measure matter, explore the different properties of matter along with dissolving rates of certain matter, and compare and contrast physical and chemical changes of matter.

NJ Student Learning Standards**Interdisciplinary Skills**

RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Careers Skills

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.

● CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	
Essential Understandings	Essential Questions
<i>Students will understand that...</i> ● Matter is anything that takes up space ● There are multiple properties of matter ● Matter can change	● What is matter? ● What are properties of matter? ● How does matter change?
Evidence of Student Learning	
Performance Tasks: Activities to provide evidence for student learning of content and cognitive skills.	Other Assessments
● Students will conduct an investigation with their team to prove that matter is conserved during a change	Formative Assessments ● Interactive Notebook ● Performance Assessments ● Exit Slips Summative Assessments ● Summary ● Labs ● Tests

	Benchmark Assessment ● Beginning of the Year Benchmark ● Mid-Year Benchmark ● End of the Year Benchmark Alternative Assessments ● Teacher Observations ● Group Work/Class Work
Vocabulary Boiling point/chemical change/conservation of matter/freezing point/matter/melting point/mixture/physical change/physical property/solution	
Knowledge and Skills	
Content	Skills
<i>Students will know...</i> ● What matter is ● The different properties of matter ● How matter changes	<i>Students will be able to ...</i> ● Discover the different states of matter and how to measure matter ● Explore the different properties of matter along with dissolving rates of certain matter ● Compare and contrast physical and chemical changes of matter
Instructional Plan	

Suggested Activities	Resources
- Measure the volume, weight, and length of objects - Conduct an investigation to see how the type of salt, the temperature of water, and the rate of stirring affect how fast salt dissolves in water - Identify mystery substances by observing physical and chemical changes	- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature - HMH Science Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com	
Modifications Special Education Students / 504 <i>(These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan)</i> reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge. English Language learners: <i>use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.</i> Students at Risk of Failure: <i>Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.</i>	

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

Suggested Options for Differentiation

English Language Learners

- Preview lessons
- Labeled pictures
- Use visuals
- Teacher tutoring
- Modified Assignments

Gifted and Talented

- Higher level questioning
- Students design questions
- Differentiated Assignments
- Choice board to extend learning
- Peer tutoring

Basic Skills/Economically Disadvantaged/Students at Risk

- Highlight key words
- Preview lessons
- Graphic organizers
- Cooperative learning groups

Special Education/504

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Pre-teach and model strategies to learn and practice new vocabulary words pertaining to the unit
- Modified assignments

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Unit 3 will address the following 21st Century Life and Careers skills:				
21st Century Themes			Career Ready Practices	
9.1	Personal Financial Literacy			CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers		√	CRP2. Apply appropriate academic and technical skills.
	Money Management			CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management		√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing			CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer		√	CRP6. Demonstrate creativity and innovation.
	Civic Financial Responsibility		√	CRP7. Employ valid and reliable research strategies.

	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation		√	CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration		√	CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations

	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
	C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 3 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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). Support an argument with evidence, data, or a model. (5-LS1-1) Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building	LS1.C: Organization for Matter and Energy Flow in Organisms Plants acquire their material for growth chiefly from air and water. (5-LS1-1) PS3.D: Energy in Chemical Processes and Everyday Life The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5-PS3-1) LS1.C: Organization for Matter and	Energy and Matter Matter is transported into, out of, and within systems. (5-LS1-1) Energy and Matter Energy can be transferred in various ways and between objects. (5-PS3-1)

and revising simple models and using models to represent events and design solutions. Use models to describe phenomena. (5-PS3-1)	Energy Flow in Organisms Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)	
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Unit 3: Science/5th Grade	Duration: 40-50 Days
Energy and Matter in Organisms	
Standards: 5-LS1-1 - Support an argument that plants get the materials they need for growth chiefly from air and water. 5-PS3-1 - Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.	
Unit Summary: Students will be exposed to energy and matter in organisms. This unit has three lessons attached to it and should be completed in about 40-50 Days. They will be able to investigate how living organisms get energy and explore how living organisms use energy and how they interact in their environments.	
NJ Student Learning Standards	
Interdisciplinary Skills RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text. RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text. RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.	

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP9. Model integrity, ethical leadership and effective management.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

Essential Understandings

Students will understand that...

- Energy gets transformed by plants
- Organisms use matter and energy
- Organisms interact in different ways

Essential Questions

- How does energy get transformed by plants?
- How do organisms use matter and energy?
- How do organisms interact?

Evidence of Student Learning

Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i> Students will conduct an investigation with their team to see how different kinds of light affect plants.	Other Assessments Formative Assessments - Teacher Observations - Response Cards - Graphic Organizers Summative Assessments - Tests - Quizzes - Labs Benchmark Assessment - Beginning of the Year Benchmark - Mid-Year Benchmark - End of the Year Benchmark Alternative Assessments - Teacher Observations - Group Work/Class Work
Vocabulary community/consumer/ecosystem/environment/habitat/niche/photosynthesis/population/predator/prey/producer	
Knowledge and Skills	
Content	Skills

<i>Students will know...</i> • How energy gets transformed by plants • How organisms use matter and energy • How organisms interact	<i>Students will be able to ...</i> • Investigate how living organisms get energy • Explore how living organisms use energy and how they interact in their environments
Instructional Plan	
Suggested Activities - Students will model what happens when one key element in photosynthesis is restricted and how it affects plant growth and survival - Students plan and carry out an investigation to determine which type of fruit provides the most energy - Students will develop a research-based model of a one square meter area to find which kinds of organisms interact in that small ecosystem	Resources - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature	
- HMH Dimensions textbook/workbook, leveled texts (readworks.org), literature from ELA program	
Websites	
- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com	
Modifications	

Special Education Students / 504 *(These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan)* reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge.

English Language learners: *use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.*

Students at Risk of Failure: *Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.*

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

Suggested Options for Differentiation

English Language Learners

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended Time
- Less questions on a page for tests

Gifted and Talented

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Differentiate Assignments
- Complete different homework assignments than peers
- Open ended questions to activate higher level thinking
- Higher level texts

Basic Skills/Economically Disadvantaged/Students at Risk

- Pre-teach vocabulary using visuals and gestures
- Chunk texts
- Highlight key words
- Frequent breaks
- Strategic grouping
- Pre-teach concepts
- Communication logs

Modifications/Accommodations

Special Education/504

- Provide differentiated instruction as needed
- Follow all IEP modifications/504 plan
- Review concepts and important vocabulary from previous lessons before teaching new information
- Check for student understanding often with formal, informal, verbal, and nonverbal measures
- Progress Monitoring
- Strategic grouping
- Pre-teach concepts

Unit 4 will address the following 21st Century Life and Careers skills:

21st Century Themes		Career Ready Practices	
9.1	Personal Financial Literacy		CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers	√	CRP2. Apply appropriate academic and technical skills.
	Money Management		CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management	√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing		CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer	√	CRP6. Demonstrate creativity and innovation.

	Civic Financial Responsibility		√	CRP7. Employ valid and reliable research strategies.
	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation			CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration			CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop

	innovative products and process using technology.
	D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 4 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model to describe phenomena. (5-LS2-1) ----- ----- Connections to Nature of Science Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena Science explanations describe the mechanisms for natural events. (5-LS2-1)	LS2.A: Interdependent Relationships in Ecosystems The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different	Systems and System Models A system can be described in terms of its components and their interactions. (5-LS2- 1)

	types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2-1) LS2.B: Cycles of Matter and Energy Transfer in Ecosystems Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)	
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Unit 4: Science/5th Grade Energy and Matter in Ecosystems	Duration: 20-30 Days
Standards: 5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. 5-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.	
Unit Summary: Students will be exposed to energy and matter in ecosystems. This unit has two lessons attached to it and should be completed in 20-30 Days. They will be able to explore phenomena of predator-prey population interactions and native and invasive species interactions and use models to develop explanations of the energy inputs and energy and matter flows within ecosystems.	
NJ Student Learning Standards	
Interdisciplinary Skills	

RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP12. Work productively in teams while using cultural global competence.

Essential Understandings

Essential Questions

<i>Students will understand that...</i> • Energy and matter move through ecosystems • Organisms change their ecosystems	• How do energy and matter move through ecosystems? • How do organisms change their ecosystems?
Evidence of Student Learning	
Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i> • Students will conduct an investigation with their team where they will research how organisms at an African watering hole interact.	Other Assessments Formative Assessments • Interactive Notebook • Performance Assessments • Exit Slips Summative Assessments • Tests • Hands-On Activities • Summary Benchmark Assessment • Beginning of the Year Benchmark • Mid-Year Benchmark • End of the Year Benchmark Alternative Assessments • Teacher Observations • Group Work/Class Work
Vocabulary	

decomposer/energy pyramid/food chain/food web/invasive species/scavenger	
Knowledge and Skills	
Content	Skills
<i>Students will know....</i> • How energy and matter move through ecosystems • How organisms change their ecosystems	<i>Students will be able to ...</i> • Explore phenomena of predator-prey population interactions and native and invasive species interactions • Use models to develop explanations of the energy inputs and energy and matter flows within ecosystems
Instructional Plan	
Suggested Activities	Resources
• Students will develop a research-based model of a specific ecosystem and use it to explore ecosystem interactions • Model how invasive species affect the food supply of an ecosystem	- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature	
- HMH Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites	
- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/	

- www.readworks.org (leveled texts)
- www.generationgenius.com

Modifications

Special Education Students / 504 (*These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan*) reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge.

English Language learners: *use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.*

Students at Risk of Failure: *Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.*

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

Suggested Options for Differentiation

English Language Learners

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Pre-teach vocabulary words
- Extended time on assessments
- Small group for assessment

Gifted and Talented

- Organize and offer flexible small group learning activities
- Teach cognitive and methodological skills
- Use centers

Basic Skills/Economically Disadvantaged/Students at Risk

- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus
- Communication logs

Special Education/504

- Follow all IEP modifications/504 plan
- Provide visual aids to support concepts being taught
- Use graphic organizers to help students organize important information from a lesson
- Reword Directions
- Strategic grouping
- Pre-teach concepts
- Small group for assessments
- Check in's during experiments to help refocus

Unit 5 will address the following 21st Century Life and Careers skills:

21st Century Themes		Career Ready Practices	
9.1	Personal Financial Literacy		CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers	√	CRP2. Apply appropriate academic and technical skills.
	Money Management		CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management	√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing	√	CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer	√	CRP6. Demonstrate creativity and innovation.

	Civic Financial Responsibility		√	CRP7. Employ valid and reliable research strategies.
	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation			CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration		√	CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology

	concepts, systems and operations
	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
	D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 5 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
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). Support an argument with evidence, data, or a model. (5- PS2-1) Analyzing and Interpreting Data Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing	PS2.B: Types of Interactions The gravitational force of Earth acting on an object near Earth’s surface pulls that object toward the planet’s center. (5-PS2-1) ESS1.A: The Universe and its Stars The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1) ESS1.B: Earth and the Solar System The orbits of Earth around the sun and of the	Cause and Effect Cause and effect relationships are routinely identified and used to explain change. (5-PS2-1) Patterns Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5- ESS1-2) Scale, Proportion, and Quantity Natural objects exist from the very small

quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used. Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5-ESS1-2) 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). Support an argument with evidence, data, or a model. (5-ESS1-1)	moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5-ESS1-2)	to the immensely large. (5-ESS1-1)
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Unit 5: Science/5th Grade Systems in Space	Duration: 20-30 Days
Unit Summary: Students will be exposed to systems in space. This unit has four lessons attached to it and should be completed in 20-30 Days. They will be able to use evidence to explain that Earth’s orbit, the moon’s orbit, and Earth’s rotation cause predictable patterns, explain why the sun appears so large and bright from Earth, and explain that Earth is a sphere and that gravity pulls objects toward Earth’s center.	
Standards: 5-PS2-1 - Support an argument that the gravitational force exerted by Earth on objects is directed down. 5-ESS1-1 - Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from the Earth.	

5-ESS1-2 - Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

NJ Student Learning Standards

Interdisciplinary Skills

RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.

RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.

● CRP7. Employ valid and reliable research strategies. ● CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. ● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	
Essential Understandings	Essential Questions
<i>Students will understand that...</i> ● Gravity affects matter on Earth ● There are daily patterns that can be observed in the sky ● There are patterns that can be observed over the course of a year ● What the sun is	● How does gravity affect matter on Earth? ● What daily patterns can be observed? ● What patterns can be observed in a year? ● What is the sun?
Evidence of Student Learning	
Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i> ● Students will construct a seasonal star guide with their team.	Other Assessments Formative Assessments ● Interactive Notebook ● Performance Assessments ● Exit Slips ● Graphic Organizers Summative Assessments ● Quizzes ● Summary ● Labs Benchmark Assessment ● Beginning of the Year Benchmark

	• Mid-Year Benchmark • End of the Year Benchmark Alternative Assessments • Teacher Observations • Participation Rubric • Group Work/Class Work
Vocabulary axis/constellation/gravity/hemisphere/orbit/revolution/rotation	
Knowledge and Skills	
Content	Skills
<i>Students will know....</i> • How gravity affects matter on Earth • What daily patterns can be observed in the sky • What patterns can be observed over the course of a year • What the sun is	<i>Students will be able to ...</i> • Use evidence to explain that Earth's orbit, the moon's orbit, and Earth's rotation cause predictable patterns • Explain why the sun appears so large and bright from Earth • Explain that Earth is a sphere and that gravity pulls objects toward Earth's center
Instructional Plan	
Suggested Activities	Resources
• Collaborate to learn how gravity affects objects on Earth's surface using a model of the Earth • Create a sundial and use it to record data about how shadows change throughout the day • Collect data that shows sunrise and sunset times over a period of three years to demonstrate the crosscutting concept of patterns	- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com

● Design and build a spectroscope and use it to analyze lights on a spectrum	
Literature - HMH Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com	
Modifications Special Education Students / 504 <i>(These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan)</i> reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge. English Language learners: <i>use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.</i> Students at Risk of Failure: <i>Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.</i> Gifted Students: <i>provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.</i>	
Suggested Options for Differentiation	
English Language Learners ● Provide pictures and well labeled models ● Speak slowly and gesture when necessary ● Extended time on assessments	

- Small group for assessment

Gifted and Talented

- Differentiate Assignments
- Differentiate Texts
- Complete Different Homework than peers

Basic Skills/Economically Disadvantaged/Students at Risk

- Graphic organizers
- Build background knowledge
- Increased parent communication
- Strategic grouping
- Pre-teach concepts
- Small group for assessments

Special Education/504

- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Pre-Teach concepts
- Extended Time
- Strategic grouping
- Small group for assessments
- Check in's during experiments to help refocus

Unit 6 will address the following 21st Century Life and Careers skills:

21st Century Themes		Career Ready Practices	
9.1	Personal Financial Literacy		CRP1. Act as a responsible and contributing citizen and employee.
	Income and Careers	√	CRP2. Apply appropriate academic and technical skills.
	Money Management		CRP3. Attend to personal health and financial well-being.
	Credit and Debt Management	√	CRP4. Communicate clearly and effectively and with reason.
	Planning, Saving, and Investing	√	CRP5. Consider the environmental, social and economic impacts of decisions.
	Becoming a Critical Consumer	√	CRP6. Demonstrate creativity and innovation.
	Civic Financial Responsibility	√	CRP7. Employ valid and reliable research strategies.

	Insuring and Protecting		√	CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
9.2	Career Awareness, Exploration, and Preparation			CRP9. Model integrity, ethical leadership and effective management.
X	Career Awareness			CRP10. Plan education and career paths aligned to personal goals.
X	Career Exploration		√	CRP11. Use technology to enhance productivity.
X	Career Preparation		√	CRP12. Work productively in teams while using cultural global competence.

Technology

	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
	A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations
	B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop

	innovative products and process using technology.
	D. Digital Citizenship: Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
	E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
	F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.

Unit 6 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. Develop a model using an example to describe a scientific principle. (5-ESS2-1) Using Mathematics and Computational Thinking Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare	ESS2.A: Earth Materials and Systems Earth’s major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth’s surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)	Scale, Proportion, and Quantity Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2) Systems and System Models A system can be described in terms of its components and their interactions. (5-ESS2-1)

alternative design solutions. Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)	ESS2.C: The Roles of Water in Earth's Surface Processes Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5- ESS2-2)	
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Unit 6: Science/5th Grade	Duration: 20-30 Days
Earth's Systems	
Unit Summary: Students will be exposed to Earth's systems. This unit has three lessons attached to it and should be completed in 20-30 Days. They will be able to explore the hydrosphere, geosphere, biosphere, and atmosphere and learn how Earth's systems interact.	
Standards:	
5-ESS2-1 - Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	
5-ESS2-2 - Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.	
NJ Student Learning Standards	
Interdisciplinary Skills	
RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	
RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	
RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.	

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

Essential Understandings

Students will understand that...

- The Earth has 4 major systems
- The 4 major systems on Earth interact with one another
- The ocean plays a role in the Earth's systems

Essential Questions

- What are Earth's major systems?
- How do Earth's systems interact?
- What is the role of the oceans in Earth's system?

Evidence of Student Learning

Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i> Students will investigate and design a solution with their team to remove salt to make salt water drinkable.	Other Assessments Formative Assessments - Teacher Observations - Interactive Notebook - Performance Assessments Summative Assessments - Tests - Summary - Hands-On Activities Benchmark Assessment - Beginning of the Year Benchmark - Mid-Year Benchmark - End of the Year Benchmark Alternative Assessments - Teacher Observations - Participation Rubric - Group Work/Class Work
Vocabulary atmosphere/biosphere/coastline/condensation/evaporation/geosphere/hydrosphere/precipitation/system/water cycle	
Knowledge and Skills	
Content	Skills

<i>Students will know....</i> • The 4 major systems on Earth • How the 4 major systems on Earth interact • The role the oceans play in Earth's major systems	<i>Students will be able to ...</i> • Explore the hydrosphere, geosphere, biosphere, and atmosphere • Learn how Earth's systems interact
Instructional Plan	
Suggested Activities • Make a scale model of the Earth's layers • Model the influence of oceans on the water cycle • Develop and use a model to explore how the oceans shape shorelines	Resources - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature	
- HMH Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites	
- www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com	
Modifications	
Special Education Students / 504 <i>(These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan)</i> reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge.	

English Language learners: *use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.*

Students at Risk of Failure: *Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.*

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

Suggested Options for Differentiation

English Language Learners

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Extended time on assessments
- Small group for assessment

Gifted and Talented

- Differentiate Assignments
- Differentiate Texts
- Complete Different Homework than peers

Basic Skills/Economically Disadvantaged/Students at Risk

- Graphic organizers
- Build background knowledge
- Increased parent communication
- Strategic grouping
- Pre-teach concepts
- Small group for assessments

Special Education/504

- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Pre-Teach concepts

- Extended Time
- Strategic grouping
- Small group for assessments
- Check in's during experiments to help refocus

Unit 7 Disciplinary Core Ideas Chart

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in 3– 5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods. Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)	ESS3.C: Human Impacts on Earth Systems Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth’s resources and environments. (5-ESS3-1)	Systems and System Models A system can be described in terms of its components and their interactions. (5-ESS3-1) ----- ----- Connections to Nature of Science Science Addresses Questions About the Natural and Material World. Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)

Unit 7: Science/5th Grade Earth and Human Activities	Duration: 20-30 Days
Unit Summary: Students will be exposed to Earth and human activities. This unit has two lessons attached to it and should be completed in 20-30 Days. They will be able to explore how human activity affects the Earth and its systems and learn about ways to keep Earth and its systems healthy.	
Standards: 5-ESS3-1 - Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.	
NJ Student Learning Standards	
Interdisciplinary Skills	
RI.5.2. Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.	

RI.5.3. Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.

RI.5.9 Integrate and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) information from several texts on the same topic in order to write or speak about the subject knowledgeably.

W.5.10. Write routinely over extended time frames (time for research, reflection, metacognition/self-correction and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

SL.5.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Technology

8.1.5.A.1 - Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.

21st Century Life and Career

- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason.
- CRP5. Consider the environmental, social and economic impacts of decisions.
- CRP6. Demonstrate creativity and innovation.
- CRP7. Employ valid and reliable research strategies.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.
- CRP12. Work productively in teams while using cultural global competence.

Essential Understandings

Essential Questions

<i>Students will understand that...</i> ● Resource use affects the Earth ● There are different ways that people can protect the environment	● How does resource use affect Earth? ● How can people protect the Environment?
Evidence of Student Learning	
Performance Tasks: <i>Activities to provide evidence for student learning of content and cognitive skills.</i> ● Students will conduct an investigation with their team to find out the total amount of recyclable material they will use in their life.	Other Assessments Formative Assessments ● Exit Slips ● Response Cards ● Graphic Organizers Summative Assessments ● Quizzes ● Summary ● Labs Benchmark Assessment ● Beginning of the Year Benchmark ● Mid-Year Benchmark ● End of the Year Benchmark Alternative Assessments ● Participation Rubric ● Teacher Observations ● Group Work/Class Work

Vocabulary biodegradable/conserve/decompose/natural resource/pollution/population/recycle/reduce/reuse	
Knowledge and Skills	
Content	Skills
<i>Students will know....</i> • How resource use affects the Earth • How people can protect the environment	<i>Students will be able to ...</i> • Explore how human activity affects the Earth and its systems • Learn about ways to keep Earth and its systems healthy
Instructional Plan	
Suggested Activities • Design a method for filtering dirty water • Conduct research in order to plan and design a pocket park with a community garden to help the environment and increase green space in an urban area	Resources - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com
Literature - HMH Dimensions Textbook/Workbook, leveled texts (readworks.org), literature from ELA program	
Websites - www.brainpop.com - www.mysteryscience.com - https://www.teachengineering.org/ - www.readworks.org (leveled texts) - www.generationgenius.com	

Modifications

Special Education Students / 504 (*These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each student's IEP or 504 plan*) reduce/revise assignments & assignments as per IEP; provide individual and small group assistance; notes, and study guides; provide background knowledge.

English Language learners: *use consistent, simplified language; provide bilingual when appropriate; provide cooperative learning opportunities, use modeling, visual aids, and manipulatives.*

Students at Risk of Failure: *Provide less distracting seating if possible, frequent check-in by teacher, study guides, notes, etc.*

Gifted Students: *provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level questions, or complimentary assignment.*

Suggested Options for Differentiation

English Language Learners

- Provide pictures and well labeled models
- Speak slowly and gesture when necessary
- Extended time on assessments
- Small group for assessment

Gifted and Talented

- Differentiate Assignments
- Differentiate Texts
- Complete Different Homework than peers

Basic Skills/Economically Disadvantaged/Students at Risk

- Graphic organizers
- Build background knowledge
- Increased parent communication
- Strategic grouping
- Pre-teach concepts

- Small group for assessments

Special Education/504

- Follow all IEP modifications/504 plan
- Provide manipulatives or the opportunity to draw solution strategies
- Pre-Teach concepts
- Extended Time
- Strategic grouping
- Small group for assessments
- Check in's during experiments to help refocus