SOUTH HARRISON TOWNSHIP ELEMENTARY SCHOOL DISTRICT



Course Name: Science	Grade Level(s): 5
BOE Adoption Date: October 2016	Revision Date(s): October 2017

ABSTRACT

The content for fifth grade span life, physical and earth sciences. The course material is generated from the following disciplinary ideas listed in the NRC Framework: Matter and Interaction, Motion and Stability, Energy, Molecules to organisms, Ecosystems, Earth's place in the Universe, Earth's Systems, Earth and Human Activity, and Engineering design. Science students in this final phase of a standards cycle beginning in kindergarten, will demonstrate an understanding by formulating answers to questions such as: "When matter changes, does its weight change? How much water can be found in different places on Earth? Can new substances be created by combining other substances? In addition, students are expected to demonstrate grade level proficiency in science by developing and using models, carrying out investigations, analyzing and interpreting data, using mathematical and computation, engaging in argument from evidence, and obtaining, evaluating, and communicating information and to use these practices to demonstrate understanding of the core ideas.

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Mission Statement

The primary goal of the South Harrison Township Elementary School District is to prepare each student with the real life skills needed to compete in a highly competitive global economy. This will be achieved by providing a comprehensive curriculum, the integration of technology, and the professional services of a competent and dedicated faculty, administration, and support staff.

Guiding this mission will be Federal mandates, including the Every Student Succeeds Act (ESSA), the New Jersey Student Learning Standards, and local initiatives addressing the individual needs of our students as determined by the Board of Education. The diverse resources of the school district, which includes a caring Home and School Association (HSA) and active adult community, contribute to a quality school system. They serve an integral role in supporting positive learning experiences that motivate, challenge and inspire children to learn.

Curriculum and Instruction Goals

Goal(s):

- 1. To ensure students are college and career ready upon graduation
- 2. To vertically and horizontally align curriculum K-12 to ensure successful transition of students at each grade level
- 3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
- 4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and intermediate benchmarking

Philosophy of the Shared Curriculum Service with Kingsway Regional School District

Together in its partnership with the South Harrison Township Elementary School District, the Kingsway Curriculum & Instruction Department is committed to providing all students grades K-12 with an engaging and quality curricular experience that aligns with the New Jersey Student Learning Standards (NJ SLS) for mathematics and English-Language Arts as well as the New Jersey Student Learning Standards (NJ SLS) for all other core disciplines. It is the goal of this shared service to provide students with curricular and educational experiences that allows them to succeed as they move on to the middle and high school level. Through this shared service, both horizontal and vertical alignment is stressed at and within each grade level with the aim of developing life-long learners who are college and career ready upon graduation from high school. Additionally, classroom instruction will be designed to meet the unique learning desires of all children and will be differentiated according to the needs of each learner. Whether through added support or enrichment activities, it is the role of the educator in the classroom to ensure students are reaching their highest level of social, emotional, and academic growth each school year. A combination of summative, formative, and performance-based

assessments will be used to assess students' understanding and acquisition of necessary concepts and skills. Group work, projects, and a variety of co-curricular activities will make mathematics more meaningful and aid in the understanding of its application across all disciplines as well as in life.

How to Read this Document

This document contains a pacing guide and curriculum units. The pacing guides serve to deliver an estimated timeframe as to when noted skills and topics will be taught. The pacing of each course, however, will differ slightly depending upon the unique needs of each class. The curriculum units contain more detailed information as to the specific skills and concepts that are introduced as well as how students will be assessed. The terms and definitions below will assist the reader in better understanding the sections and components of this curriculum document.

Terms to Know

- 1. Accommodation(s): The term "accommodation" may be used to describe an *alteration* of environment, curriculum format, or equipment that allows an individual with a disability to gain access to content and/or complete assigned tasks. They allow students with disabilities to pursue a regular course of study. The term accommodation is often used interchangeable with the term modification. However, it is important to remember that modifications change or modify the intended learning goal while accommodations result in the same learning goal being expected but with added assistance in that achievement. Since accommodations do not alter what is being taught, instructors should be able to implement the same grading scale for students with disabilities as they do for students without disabilities.
- 2. Differentiated Instruction: Differentiation of instruction relies on the idea that instructional approaches should be tailored to each individual student's learning needs. It provides students an array of options during the learning process that allows them make sense of ideas as it relates to them. The integration of differentiated instructional techniques is a curriculum design approach to increase flexibility in teaching and decrease the barriers that frequently limit student access to materials and learning in classrooms. <u>http://www.udlcenter.org/aboutudl</u>
- 3. Enduring Understanding: Enduring understandings (aka big ideas) are statements of understanding that articulate deep conceptual understandings at the heart of each content area. Enduring understandings are noted in the alongside essential questions within each unit in this document. <u>http://www.ascd.org</u>

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- 4. Essential Question: These are questions whose purpose is to stimulate thought, to provoke inquiry, and to spark more questions. They extend beyond a single lesson or unit. Essential questions are noted in the beginning of each unit in this document. <u>http://www.ascd.org</u>
- 5. Formative Assessment(s): Formative assessments monitor student learning to provide ongoing feedback that can be used by (1) instructors to improve teaching and (2) by students to improve their learning. Formative assessments help identify students' strengths and weaknesses and address problems immediately.
- 6. Learning Activity(s): Learning activities are those activities that take place in the classroom for which the teacher facilitates and the students participate in to ensure active engagement in the learning process. (Robert J. Marzano, *The Art and Science of Teaching*)
- 7. Learning Assignment(s): Learning assignments are those activities that take place independently by the student inside the classroom or outside the classroom (i.e. homework) to extend concepts and skills within a lesson. http://www.marzanocenter.com
- 8. Learning Goal(s): Learning goals are broad statements that note what students "should know" and/or "be able to do" as they progress through a unit. Learning goals correlate specifically to the NJSLS (New Jersey Student Learning Standards) are noted within each unit.
- 9. Learning Objective(s): Learning objectives are more specific skills and concepts that students must achieve as they progress towards the broader learning goal. These are included within each unit and are assessed frequently by the teacher to ensure students are progressing appropriately. <u>http://www.marzanoresearch.com</u>
- **10. Model Assessment:** Within the model curriculum, model assessments are provided that included assessments that allow for measuring student proficiency of those target skills as the year of instruction progresses. http://www.state.nj.us/education/modelcurriculum/
- **11. Model Curriculum:** The model curriculum has been provided by the state of New Jersey to provide a "model" for which districts can properly implement the NJSLS (New Jersey Student Learning Standards) by providing an example from which to work and/or a product for implementation.

- 12. Modification(s): The term "modification" may be used to describe a *change* in the curriculum. Modifications are typically made for students with disabilities who are unable to comprehend all of the content an instructor is teaching. The term modification is often used interchangeable with the term accommodations. However, it is important to remember that modifications change or modify the intended learning goal while accommodations result in the same learning goal being expected but with assistance in that achievement.
- **13. Performance Assessment(s):** (aka alternative or authentic assessments) Performance assessments are a form of assessment that requires students to perform tasks that generate a more authentic evaluation of a student's knowledge, skills, and abilities. Performance assessments stress the application of knowledge and extend beyond traditional assessments (i.e. multiple-choice question, matching, true & false, etc.).
- 14. Standard(s): Academic standards, from which the curriculum is built, are statements that of what students "should know" or "be able to do" upon completion of a grade-level or course of study. Educational standards help teachers ensure their students have the skills and knowledge they need to be successful by providing clear goals for student learning. <u>http://www.state.nj.us/njded/cccs/</u>
 - <u>State</u>: The New Jersey Student Learning Standards (NJSLS) include Preschool Teaching and Learning Standards as well as K-12 standards for: *Visual and Performing Arts; Comprehensive Health and Physical Education; Science; Social Studies;* World Languages; Technology; and 21st-Century Life and Careers.
- **15. Summative Assessment(s):** Summative assessments evaluate student learning at the end of an instructional time period by comparing it against some standard or benchmark. Information from summative assessments can be used formatively when students or faculty use it to guide their efforts and activities in subsequent courses.
- 16. 21st Century Skill(s): These skills emphasis the growing need to focus on those skills that prepare students successfully by focusing on core subjects and 21st century themes; learning and innovation skills; information, media and technology skills; and life and career skills. These concepts are embedded in each unit of the curriculum. http://www.p21.org/our-work/p21-framework

Proficiencies and Pacing: Course Name: Science 5

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 1: Properties of Matter	September – October (3 Weeks)	Subject Area: <u>NJ Student Learning</u> <u>Standards:</u> Science- NJSLS-5-PS1-3 NJSLS-5-PS1-1 Interdisciplinary: <u>NJSLS:</u> Literacy- NJSLS-RI.5.7 NJSLS-W.5.7 NJSLS-W.5.7 NJSLS-W.5.8 NJSLS-W.5.9 Mathematics- NJSLS-MP.2 NJSLS-MP.4 NJSLS-MP.5 NJSLS-S.NBT.A.1 NJSLS-5.NBT.A.1 NJSLS-5.NF.B.7 NJSLS-5.MD.C.3 NJSLS-5.MD.C.4	NJ SLS 5-PS1-3: Students will measure a variety of properties can be used to identify materials. (2 weeks) NJ SLS 5-PS1-1: Students will understand that 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. (1 week)	Topics: Matter, subatomic particles, properties of matter Skills: Planning and carrying out investigations, developing models, make observations, take measurements, describe

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 2: Changes to Matter	(3 Weeks) October- November	Subject Area: <u>NJ Student Learning</u> <u>Standards:</u> Science- NJSLS-5-PS1-4 NJSLS-5-PS1-2 Interdisciplinary: <u>NJSLS:</u> Literacy- NJSLS-W.5.7 NJSLS-W.5.8 NJSLS-W.5.9 Mathematics- NJSLS-MP.2 NJSLS-MP.4 NJSLS-MP.5 NJSLS-5.MD.A.1	NJ SLS 5-PS1-2: Students will understand the amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (2 weeks) NJ SLS 5-PS1-4: Students will to understand when two or more different substances are mixed, a new substance with different properties may be formed (1 week)	Topics: Conservation of mass Skills: Planning and carrying out investigations, using mathematics and computational thinking, measure and graph quantities

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 3: Energy and Matter in	November- January	Subject Area: <u>NJ Student Learning</u> <u>Standards:</u>	NJ SLS 5-LS1-1: Students will understand that plants acquire their	Topics: Matter among plants, food web

Ecosystems			material for growth chiefly from air and water. (1	Skills: Developing and using models,
	(3 Weeks)	Science-	week)	engaging in arguments from evidence
		NJSLS-5-LS1-1		
		NJSLS-5-LS2-1	NJ SLS 5-LS2-1:	
		NJSLS-5-PS3-1	Students will understand that organisms are related	
			in food webs in which some animals eat plants for	
		Interdisciplinary:	food and other animals eat the animals that eat	
		<u>NJSLS:</u>	plants. (1 week)	
		Literacy-		
		NJSLS-RI.5.1	NJ SLS 5-LS2-1:	
		NJSLS-RI.5.7	Students will understand that matter cycles between	
		NJSLS-RI.5.9	the air and soil and among plants, animals, and	
		NJSLS-W.5.1	microbes as these organisms live and die. Organisms	
		NJSLS-SL.5.5	obtain gases, and water, from the environment, and	
			release waste matter (gas, liquid, or solid) back into	
		Mathematics-	the environment. (1 week)	
		NJSLS-MP.2		
		NJSLS-MP.4	NJ SLS 5-PS3-1:	
		NJSLS-MP.5	Students will understand that the energy released	
		NJSLS-5.MD.A.1	[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). (1 week)	
			,, (, (

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 4: Water on Earth	September – October	Subject Area: <u>NJ Student Learning</u> <u>Standards:</u>	NJ SLS 5-ESS2-2:	Topics: Distribution of water on Earth

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(3 Weeks)	Science- NJSLS-5-ESS2-2 NJSLS-5-ESS3-1	Students will understand that 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. (2 weeks)	Skills: Use mathematics and computational thinking and in obtaining, evaluating, and communicating information, Graph data, Describe graphs
	NJSLS-RI.5.1 NJSLS-RI.5.7 NJSLS-RI.5.7 NJSLS-RI.5.9 NJSLS-W.5.9 NJSLS-W.5.9 NJSLS-SL.5.5 Mathematics- NJSLS-MP.2 NJSLS-MP.4	NJ SLS 5-ESS3-1: Students will understand that 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. (1 week)	

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 5:		Subject Area:		
Earth	March-April	NJ Student Learning	NJ SLS 5-ESS2-1:	Topics: Geosphere, biosphere,
Systems		<u>Standards:</u>	Students will understand that Earth's major systems	hydrosphere, and atmosphere
	(4 Weeks)		are the geosphere (solid and molten rock, soil, and	interactions,
		Science-	sediments), the hydrosphere (water and ice), the	
		NJSLS-5-ESS2-1	atmosphere (air), and the biosphere (living things,	Skills: Developing and using models,
		NJSLS-5-ESS3-1	including humans). (3 weeks)	obtaining, evaluating, and
				communicating information.
		Interdisciplinary:	NJ SLS 5-ESS3-1:	
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<u>NJSLS:</u> Literacy- NJSLS-RI.5.1 NJSLS-RI.5.7 NJSLS-W.5.8 NJSLS-RI.5.9 NJSLS-W.5.9 NJSLS-SL.5.5	Students will understand that 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. (1 week)	
<i>Mathematics-</i> NJSLS-MP.2 NJSLS-MP.4 NJSLS-5.G.A.2		

Unit Title:	Duration/ Month(s)	Related Standards	Learning Goals	Topics and Skills
Unit 6: Interactions Within the Earth, Sun, and Moon System	May-June (4 Weeks)	Subject Area: <u>NJ Student Learning</u> <u>Standards:</u> Science- NJSLS-5-PS2-1 NJSLS-5-ESS1-1 NJSLS-5-ESS1-2 Interdisciplinary: <u>NJSLS:</u> Literacy- NJSLS-RI.5.1	NJ SLS 5-PS2-1 Students will understand that the gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. (1 week) NJ SLS 5-ESS1-1: Students will understand that 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. (1 week) NJ SLS 5-ESS1-2:	Topics: Rotation of Earth, revolution of Earth, gravitational force, seasons Skills: analyzing and interpreting data and engaging in argument from evidence

NJSLS-RI.5.7 NJSLS-RI.5.8 NJSLS-RI.5.9 NJSLS-W.5.1 NJSLS-SL.5.5 <i>Mathematics</i> - NJSLS-MP.2 NJSLS-MP.4 NJSLS-5.NBT.A.2 NJSLS-5.G.A.2	Students will understand that the orbits of Earth around the sun and of the 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. (2 weeks)	
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Unit 1: Proportios of Matter	Performended Duration: (2 weeks)
Onit 1: Properties of Matter	Recommended Duration: (5 weeks)

In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of scale, proportion, and quantity is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, and use these practices to demonstrate understanding of the core ideas.

Description of abstract from: <u>http://www.nj.gov/education/modelcurriculum/sci/5u1.pdf</u>

Essential Questions	Enduring Understandings
What are the three main states of matter?	Does gas have mass?
 What are the properties of each state of matter? 	 How can you use the properties of matter to identify an object?
What are the additional states of matter?	What is the difference between qualitative and quantitative
 What properties of matter does your object have? 	observations?
	 How can using qualitative and quantitative observations help us
	identify an object?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power	NJ SLS 5-PS1-3: Students will measure a variety of properties can	NJ SLS 5-PS1-3: • Students will be able to identify an object
NJ SLS 5-PS1-3: Make observations and measurements to identify materials based on	be used to identify materials. (2 weeks)	 based on its property.
their properties.	NJ SLS 5-PS1-1: Students will understand that matter of any type	NJ SLS 5-PS1-1:
NJ SLS 5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.	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	 Students will be able to explain that matter of any type can be subdivided into particles that are too small to be seen. Students will be able to illustrate a diagram showing the four types of states of matter.

Relevant Standards	Learning Goals	Learning Objectives
	effects of air on larger particles or objects. (1 week)	

Formative	Summative	Performance Assessments	Major Activities/ Assignments
Assessments	Assessments		(required)
 Daily Warm up 	• Unit	Laboratory activities:	Choice boards
 Exit Slips 	assessment	 Strange matter <u>http://www.strangematterexhibit.com/</u> 	 Matter acrostic poem
Teacher	 Projects 	Solid to liquid	 Name that Object
observation		http://www.bbc.co.uk/schools/scienceclips/ages/8_9/	descriptive writing piece
 Self-Reflection 		<u>solid_liquids.shtml</u>	
writing		 Liquid to gas <u>http://www.bbc.co.uk/schools/scienceclips/</u> 	
 White board 		ages/9_10/gases.shtml	
review		 States of matter simulation <u>http://www.abpischools.org.uk</u> 	
Scoot		<pre>/page/modules/solids-liquids-gases/?coSiteNavigation_allTopic=1</pre>	
Task Cards		Mystery powder investigation	
 Educational 		http://www.mccracken.kyschools.us/Downloads/5th%20Grade%20	
games		Structures%20and%20Properties%20of%20Matter.pdf	
Prove it sheet			

Possible Assessment Modifications /Accommodations/Differentiation:					
Special Education	English Language Learners	At Risk Students	Gifted Students		
Accommodations	Accommodations	Accommodations	Modifications		
Additional time	Oral responses	Allow retakes	Have students answer open		
Vary test formats	Give students extra time to	Opportunities for review of	ended questions		
	complete tests	assessments			
			<u>Differentiation</u>		
Modifications	Modifications	Modifications	 Multiple texts (leveled reading) 		
Oral testing	Oral testing	• Make all or part of the exam oral	Individualized		
Shortened assessments	Simplify instructions		assessment/Independent study		
Simplify task directions		Differentiation	 Additional research into 		
		 Multiple texts (leveled reading) 	topics		
Differentiation	Differentiation				
SHSD Office of Curriculum and Ins	truction				

Pos	Possible Assessment Modifications /Accommodations/Differentiation:				
•	Multiple texts (leveled reading)	•	Multiple texts (leveled reading)		
•	Small group administration of classroom tests/quizzes as needed and/or available				

Instructional Strategies • Structured Overview • Reading Brainstorming ٠ Think, Pair, Share • Cooperative Learning Groups • Structured Controversy • Writing to Inform • Essays • **Research Projects** • Assigned Questions • Simulations • Explaining ٠

• Levels of Questions

Possible Instructional Modifications /Accommodations/Differentiation				
Special Education	English Language Learners	At Risk Students	Gifted Students	
 <u>Accommodations</u> Modify pace of instruction to allow additional processing time Completed copy of notes Use of checklists Study guide prior to assessments <u>Modifications</u> 	Accommodations • Graphic organizers • Extra visual cues • Study guide prior to assessments <u>Modifications</u> • Reword problems in simplified language	 <u>Accommodations</u> Graphic organizers Study guide prior to assessments <u>Differentiation</u> One on one conferences Flexible grouping 	 <u>Differentiation</u> Assign alternate assignments for in class work Encourage students to explore concepts in depth and encourage independent studies or investigations. 	

Possible Instructional Modifications /Accommodations/Differentiation			
Change level of difficulty using			
choice boards	Differentiation		
	Provide multiple grouping		
Differentiation	opportunities for students to		
Small group instruction	share their ideas and to		
	encourage work among various		
	backgrounds and cultures (e.g.		
	multiple representation and		
	multimodal experiences).		
	Provide ELL students with		
	multiple literacy strategies.		
	Cooperative learning		

Unit Vocabulary

Essential: Matter, atoms, solid, liquid, gas, property, magnetism, density, mass,

Non-Essential: Odor, size, shape, color, hardness, texture, invisible, measurement

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
<u>Literacy-</u>	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NJSLS-RI.5.7: Draw on information	document using a word processing		 Students plan and conduct
from multiple print or digital sources,	application to enhance text		scientific investigations and write
demonstrating the ability to locate an	and include graphics, symbols		detailed explanations based on
answer to a question quickly or to solve	and/ or pictures.		their evidence. Students compare
a problem efficiently. (5-PS1-1)			their explanations to those made
	NJ SLS 8.1.5.D.2: Analyze the		by scientists and relate them to
NJSLS-W.5.7: Conduct short research	resource citations in online		their own understandings of the
projects that use several sources to	materials for proper use.		natural and designed worlds.
build knowledge through investigation			
of different aspects of a topic. (5-PS1-3)	NJ SLS 8.2.5.B.3: Investigate ways		<u>Communication</u>
	that various technologies are		Students can identify conventions

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
NJSLS-W.5.8: Recall relevant	being developed and used to		for writing and speaking
information from experiences or gather	reduce improper use of resources.		scientifically that distinguish
relevant information from print and			scientific communication from
digital sources; summarize or	NJ SLS 8.2.5.B.4: Research		other types of expression, and
paraphrase information in notes and	technologies that have changed		describe reasons behind those
finished work, and provide a list of	due to society's changing needs		differences such as the need in
sources. (5-PS1-3)	and wants.		science for precision, detail, and
			evidence over opinion.
NJSLS-W.5.9: Draw evidence from	NJ SLS 8.2.5.C.4: Collaborate and		
literary or informational texts to	brainstorm with peers to solve a		Collaboration (Civic Literacy)
support analysis, reflection, and	problem evaluating all solutions to		 Students work collaboratively
research. (5-PS1-3)	provide the best results with		with others, either virtually or
	supporting sketches or models.		face-to-face, while participating in
<u>Mathematics-</u>			scientific discussions and
NJSLS-MP.2: Reason abstractly and	NJ SLS 8.2.5.D.6: Explain the		appropriately using claims,
quantitatively. (5-PS1-1) (5-PS1-3)	positive and negative effect of		evidence, and reasoning.
	products and systems on humans,		
NJSLS-MP.4: Model with mathematics.	other species and the		Information Literacy (Health Literacy)
(5-PS1-1)	environment, and when the		 Students are able to locate
	product or system should be used.		reliable scientific information in
NJSLS-MP.5: Use appropriate tools			reputable reference books, back
strategically. (5-PS1-3)			issues of journals and magazines,
			on websites, and in computer
NJSLS-5.NBT.A.1: Explain patterns in			databases.
the number of zeros of the product			
when multiplying a number by powers			Media Literacy (Financial Literacy)
of 10, and explain patterns in the			 Students are able to identify and
placement of the decimal point when a			critique arguments in which the
decimal is multiplied or divided by a			claims are not consistent with the
power of 10. Use whole-number			evidence given.
exponents to denote powers of 10. (5-			
PS1-1)			Leadership and Responsibility
			 Students understand the

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
NJSLS-5.NF.B.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (5-PS1-1)			importance of proper citations and respect for intellectual property rights.
NJSLS-5.MD.C.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement. (5-PS1-1)			
NJSLS-5.MD.C.4: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units. (5-PS1-1)			

Text:

• Science (2005). Orlando, FL: Harcourt

Materials:

• Chomebooks, science articles, Google slides, worksheets, foldable, string, magnets, legos, pom poms, scratch and sniff stickers

Unit 2: Changes in Matter	Recommended Duration: (3 weeks)

In this unit of study, students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved. Students determine whether the mixing of two or more substances results in new substances. The crosscutting concepts of cause and effect and scale, proportion, and quantity are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations and using mathematics and computational thinking. Students are expected to use these practices to demonstrate understanding of the core ideas.

Description of abstract from: http://www.nj.gov/education/modelcurriculum/sci/5u2.pdf

Essential Questions	Enduring Understandings
 What is the law of conservation of mass? What happens to an object undergoing a physical change? What happens to an object undergoing a chemical change? What happens to the molecules of an object undergoing a physical change? What happens to the molecules of an object undergoing a chemical change? 	 Will the mass of two objects undergoing a chemical or physical reaction change or remain the same? Is it possible to undo a chemical change of an object?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power	NJ SLS 5-PS1-2:	NJ SLS 5-PS1-2:
NJ SLS 5-PS1-4: Conduct an investigation to determine whether the mixing of two or more	Students will understand the amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (2 weeks)	 Students will be able to develop an experiment to prove that the mass is not changed after a chemical or physical change.
substances results in new substances.		NJ SLS 5-PS1-4:
NJ SLS 5-PS1-2: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or	NJ SLS 5-PS1-4: Students will understand when two or more different substances are mixed, a new substance with different properties may be formed (1 week)	 Students will be able to identify if an object went through a physical or chemical change. Students will be able to explain why chemical changes and not be undone.

Relevant Standards	Learning Goals	Learning Objectives
mixing substances, the total weight of matter is conserved.		

Formative Assessments	Summative Assessments	Performance Assessments	Major Activities/ Assignments
 Daily Warm up Exit Slips Teacher observation Self-Reflection writing White board review Scoot Task Cards Educational games Prove it sheet 	Unit Assessment	 Change of State: <u>http://betterlesson.com/lesson/629402/</u> <u>investigating-change-of-state</u> Physical vs. Chemical Changes: <u>http://betterlesson.com/lesson/630451/</u> <u>physical-changes-versus-chemical-changes</u> Conservation of Mass: <u>http://betterlesson.com/next_gen_science/browse/</u> <u>2164/ngss-5-ps1-4-conduct-an-investigation-to-</u> <u>determine-whether-the-</u> <u>mixing-of-two-or-more-substances-results</u> <u>-in-new-substances</u> Physical and Chemical Changes: <u>https://www.teachingchannel.org/videos/</u> <u>teaching-physical-and-chemical-changes</u> 	 Law of conservation of mass lab report Physical/chemical change task cards

Possible Assessment Modifications /Accommodations/Differentiation:					
Special Education	English Language Learners	At Risk Students	Gifted Students		
Accommodations	Accommodations	Accommodations	Modifications		
Additional time	Oral responses	Allow retakes	Have students answer open		
 Vary test formats 	Give students extra time to	Opportunities for review of	ended questions		
	complete tests	assessments			
			<u>Differentiation</u>		
Modifications	Modifications	Modifications	 Multiple texts (leveled reading) 		
Oral testing	Oral testing	 Make all or part of the exam oral 	Individualized		
 Shortened assessments 	 Simplify instructions 		assessment/Independent study		
 Simplify task directions 		Differentiation	 Additional research into topics 		
		 Multiple texts (leveled reading) 			

Possible Assessment Modifications /Accommodations/Differentiation:					
Differentiation	Differentiation				
 Multiple texts (leveled reading) Small group administration of classroom tests/quizzes as needed and/or available 	Multiple texts (leveled reading)				

Instr	Instructional Strategies			
• 5	Structured Overview			
• [Reading			
• [Brainstorming			
• -	Think, Pair, Share			
• (Cooperative Learning Groups			
• 5	Structured Controversy			
• \	Writing to Inform			
• [Essays			
• [Research Projects			
• /	Assigned Questions			
• 9	Simulations			
• [Explaining			
•	Levels of Questions			

Possible Instructional Modifications /Accommodations/Differentiation					
Special Education	English Language Learners	At Risk Students	Gifted Students		
 <u>Accommodations</u> Modify pace of instruction to allow additional processing time Completed copy of notes Use of checklists Study guide prior to assessments 	 <u>Accommodations</u> Graphic organizers Extra visual cues Study guide prior to assessments <u>Modifications</u> Reword problems in simplified 	 <u>Accommodations</u> Graphic organizers Study guide prior to assessments <u>Differentiation</u> One on one conferences Flexible grouping 	 <u>Differentiation</u> Assign alternate assignments for in class work Encourage students to explore concepts in depth and encourage independent studies or investigations. 		

Possible Instructional Modifications /Accommodations/Differentiation			
Modifications	language		
Change level of difficulty using			
choice boards	Differentiation		
 <u>Differentiation</u> Small group instruction 	 Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences). Provide students with multiple literacy strategies. Cooperative learning 		

Unit Vocabulary Essential: Physical change, chemical change, law of conservation of mass Non-Essential: Qualitative, quantitative

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
<u>Literacy-</u>	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NJSLS-W.5.7: Conduct short research	document using a word processing		 Students plan and conduct
projects that use several sources to	application to enhance text		scientific investigations and write
build knowledge through investigation	and include graphics, symbols		detailed explanations based on
of different aspects of a topic. (5-PS1-	and/ or pictures.		their evidence. Students compare
2),(5-PS1-4)			their explanations to those made
	NJ SLS 8.1.5.D.2: Analyze the		by scientists and relate them to
NJSLS-W.5.8: Recall relevant	resource citations in online		their own understandings of the
information from experiences or gather	materials for proper use.		natural and designed worlds.
relevant information from print and			
digital sources; summarize or	NJ SLS 8.2.5.B.3: Investigate ways		<u>Communication</u>

Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
paraphrase information in notes and	that various technologies are		Students can identify conventions
finished work, and provide a list of	being developed and used to		for writing and speaking
sources. (5-PS1-2) (5-PS1-4)	reduce improper use of resources.		scientifically that distinguish
			scientific communication from
NJSLS-W.5.9: Draw evidence from	NJ SLS 8.2.5.B.4: Research		other types of expression, and
literary or informational texts to	technologies that have changed		describe reasons behind those
support analysis, reflection, and	due to society's changing needs		differences such as the need in
research. (5-PS1-2), (5-PS1-4)	and wants.		science for precision, detail, and
			evidence over opinion.
Mathematics-	NJ SLS 8.2.5.C.4: Collaborate and		
NJSLS-MP.2: Reason abstractly and	brainstorm with peers to solve a		Collaboration (Civic Literacy)
quantitatively. (5-PS1-2)	problem evaluating all solutions to		Students work collaboratively
	provide the best results with		with others, either virtually or
NJSLS-MP.4: Model with mathematics.	supporting sketches or models.		face-to-face, while participating in
(5-PS1-2)			scientific discussions and
	NJ SLS 8.2.5.D.6: Explain the		appropriately using claims,
NJSLS-MP.5: Use appropriate tools	positive and negative effect of		evidence, and reasoning.
strategically. (5-PS1-2)	products and systems on humans,		
	other species and the		Information Literacy (Health Literacy)
NJSLS-5.MD.A.1: Convert among	environment, and when the		Students are able to locate
different-sized standard measurement	product or system should be used.		reliable scientific information in
units within a given measurement			reputable reference books, back
system (e.g., convert 5 cm to 0.05 m),			issues of journals and magazines,
and use these conversions in solving			on websites, and in computer
multi-step, real-world problems. (5-			databases.
PS1-2)			
			Media Literacy (Financial Literacy)
			• Students are able to identify and
			critique arguments in which the
			claims are not consistent with the
			evidence given.
			Leadership and Responsibility

Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
			 Students understand the importance of proper citations and respect for intellectual property rights.

Resources

Text:

• Science (2005). Orlando, FL: Harcourt

Materials:

• Chomebooks, science articles, Google slides, worksheets, baking soda, vinegar, ziplock bags, scales, task cards, mosa mack comic

Unit 3: Energy and Matter in Ecosystems	Recommended Duration: (3 weeks)

In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun. The crosscutting concepts of energy and matter and systems and system models are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in developing and using models and engaging in argument from evidence. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Description of abstract from: http://www.nj.gov/education/modelcurriculum/sci/5u3.pdf

Essential Questions	Enduring Understandings
 Would it affect an ecosystem if a producer was diseased? Does overpopulation of a predator affect an ecosystem? Are all herbivores going to be classified as primary consumers? Could a secondary consumer be classified as an herbivore? Why would a hawk move to NYC? What do planets eat? Where do fallen leaves go? 	 What could possibly happen to the food chain if overpopulation of a predator or disease is introduced to an ecosystem? Could a plant survive in an environment without soil? How does energy get from the sun to a secondary producer?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power NJ SLS 5-LS1-1: Support an argument that plants get the materials they need for growth chiefly	NJ SLS 5-LS1-1: Students will understand that plants acquire their material for growth chiefly from air and water. (1 week)	 NJ SLS 5-LS1-1: Students will be able to explain what is imperative in order for plants to grow.
from air and water	NJ SLS 5-LS2-1:	NJ SLS 5-LS2-1: • Students will be able to explain the differences

Relevant Standards	Learning Goals	Learning Objectives
 NJ SLS 5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. NJ SLS 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. 	Students will understand that organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. (2 weeks) NJ SLS 5-PS3-1: Students will understand that 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). (1 week)	 between producers, consumers, and decomposers. Students will be able to identify whether a living thing is either a producer, consumer, or decomposer. Students will be able to explain how energy is transferred between organisms in a food chain. Students will be able to explain how energy is transferred between organisms in a food web. NJ SLS 5-PS3-1: Students will be able to explain how plants get their energy.

Formative Assessments	Summative Assessments	Performance Assessments	Major Activities/ Assignments (required)
 Daily Warm up 	Science menu	Task cards	Food web poster
Exit Slips	 Unit assessments 	I can statements	
 Teacher observation 			
 Self-Reflection writing 			
White board review			
• Scoot			
Task Cards			
 Educational games 			

Possible Assessment Modifications /Accommodations/Differentiation:			
Special Education	English Language Learners	At Risk Students	Gifted Students
Accommodations	Accommodations	<u>Accommodations</u>	Differentiation
Additional time	Allow for oral follow up to	Allow retakes	 Multiple texts (leveled reading)
 Vary test formats 	written responses	• Use of a checklist as a timeline	Individualized
• Graphic organizers for written		tool	assessment/Independent
tasks	Modifications		study additional research into
	Oral testing	Modifications	topics
	Simplify instructions	• Make all or part of the exam oral	
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Possible Assessment Modifications /A	ccommodations/Differentiation:		
 <u>Modifications</u> Oral testing Shortened assessments Simplify task directions 	 <u>Differentiation</u> Multiple texts (leveled reading) 	 <u>Differentiation</u> Multiple texts (leveled reading) 	
 <u>Differentiation</u> Multiple texts (leveled reading) Small group administration of classroom tests/quizzes as needed and/or available 			

Instructional Strategies • Structured Overview • Reading • Brainstorming • Think, Pair, Share • Cooperative Learning Groups

- Structured Controversy
- Writing to Inform
- Essays
- Research Projects
- Assigned Questions
- Simulations
- Explaining
- Levels of Questions

Possible Instructional Modifications /Accommodations/Differentiation			
Special Education	English Language Learners	At Risk Students	Gifted Students
Accommodations	Accommodations	Accommodations	Differentiation
Directions repeated/clarified	Graphic organizers	Graphic organizers	Provide learning centers

Possible Instructional Modifications /Accommodations/Differentiation			
Graphic organizers		Review directions individually	where students are in charge
	Modifications		of their learning
Modifications	Reword problems in simplified	Differentiation	Brainstorm with gifted children
Change level of difficulty using	language	One on one conferences	on what types of projects they
choice boards		Flexible grouping	would like to explore to extend
	Differentiation		what they're learning in the
Differentiation	Preteach vocabulary		classroom.
Small group instruction	Cooperative learning		

Unit Vocabulary

Essential: Ecosystem, abiotic factors, biotic factors, producer, primary consumer, secondary consumer, decomposer, food chain, food web, predator, prey, herbivore, carnivore, omnivore

Non-Essential: biome, tertiary consumer

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
<u>Literacy-</u>	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NJSLS-RI.5.1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-LS1-1)	document using a word processing application to enhance text and include graphics, symbols and/ or pictures.		 Students plan and conduct scientific investigations and write detailed explanations based on their evidence. Students compare their explanations to those made
NJSLS-RI.5.7: Draw on information from multiple print or digital sources,	NJ SLS 8.1.5.D.2: Analyze the resource citations in online materials for proper use.		by scientists and relate them to their own understandings of the natural and designed worlds.
demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-LS2-1), (5-PS3- 1) NJSLS-RI.5.9: Integrate information	NJ SLS 8.2.5.B.3: Investigate ways that various technologies are being developed and used to reduce improper use of resources.		 <u>Communication</u> Students can identify conventions for writing and speaking scientifically that distinguish scientific communication from

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
from several texts on the same topic in	NJ SLS 8.2.5.B.4: Research		other types of expression, and
order to write or speak about the	technologies that have changed		describe reasons behind those
subject knowledgeably. (5-LS1-1)	due to society's changing needs		differences such as the need in
NJSLS-W.5.1: Write opinion pieces on	and wants.		science for precision, detail, and evidence over opinion
topics or texts, supporting a point of	NJ SLS 8.2.5.C.4: Collaborate and		
	brainstorm with peers to solve a		Collaboration (Civic Literacy)
	problem evaluating all solutions to		 Students work collaboratively
	provide the best results with		with others, either virtually or
NJSLS-SL.5.5: Include multimedia	supporting sketches or models.		face-to-face, while participating in
components (e.g., graphics, sound) and			scientific discussions and
visual displays in presentations when	NJ SLS 8.2.5.D.6: Explain the		appropriately using claims,
appropriate to enhance the	positive and negative effect of		evidence, and reasoning.
development of main ideas or themes.	products and systems on humans,		
(5-LS2-1), (5-PS3-1)	other species and the		Information Literacy (Health Literacy)
	environment, and when the		 Students are able to locate
<u>Mathematics-</u>	product or system should be used.		reliable scientific information in
NJSLS-MP.2: Reason abstractly and			reputable reference books, back
guantitatively. (5-LS1-1). (5-LS2-1)			issues of journals and magazines,
			on websites, and in computer
			databases.
NJSLS-MP.4: Model with mathematics.			
(5-LS1-1), (5-LS2-1)			Media Literacy (Financial Literacy)
			 Students are able to identify and
			critique arguments in which the
NJSLS-MP.5: Use appropriate tools			claims are not consistent with the
strategically. (5-LS1-1)			evidence given.
NISIS-5.MD.A.1. Convert among			Leadership and Responsibility
different-sized standard measurement			 Students understand the
units within a given measurement			importance of proper citations
system (e.g., convert 5 cm to 0.05 m)			and respect for intellectual
and use these conversions in solving			property rights.

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
multi-step, real world problems. (5-LS1-			
1)			

Resources

Text:

• Science (2005). Orlando, FL: Harcourt

Materials:

• Chomebooks, science articles, Google slides, worksheets, food chain card game

Unit 4: water on Earth Recommended Duration: (3 weeks)	Unit 4: Water on Earth	Recommended Duration: (3 weeks)
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In this unit of study, students describe and graph data to provide evidence about the distribution of water on Earth. The crosscutting concepts of scale, proportion, quantity and systems, and systems models are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade appropriate proficiency in using mathematics and computational thinking and in obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Description of abstract from: http://www.nj.gov/education/modelcurriculum/sci/5u4.pdf

Essential Questions	Enduring Understandings
 Is it easy for salt water to be purified into fresh water? Can we prevent pollution on Earth? Can we prevent the destruction of the ozone layer? How much water is in the world? When you turn on the faucet, where foes the water come from? Can we make it rain? 	 Would it be economical to create a system that made salt water into fresh water? What actions can we take in order to preserve fresh water? How does human impact on the Earth affect our environment?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power	NJ SLS 5-ESS2-2:	NJ SLS 5-ESS2-2: • Students will be able to create a pie graph
NJ SLS 5-ESS2-2: Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence	Students will understand that 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	reflecting the water distribution on Earth.
about the distribution of water on Earth. NJ SLS 5-ESS3-1: Obtain and combine	streams, lakes, wetlands, and the atmosphere. (2 weeks)	 Students will be able to explain environmental issues and ways to protect the environment.
information about ways individual communities	NJ SLS 5-ESS3-1:	

Relevant Standards	Learning Goals	Learning Objectives
use science ideas to protect the Earth's	Students will understand that human activities in	
resources and environment.	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. (1 week)	

Formative Assessments	Summative Assessments	Performance Assessments	Major Activities/ Assignments (required)
 Daily Warm up Exit Slips Teacher observation Self-Reflection writing White board review Scoot Task Cards Educational games 	 Environmental issues Z-Chart Project Unit Assessment Clean Water Challenge 	 Distribution of water on Earth research Where in the world is water? http://www.ca4h.org/files/14369.p df Simulating an oil spill https://www.teachingchannel.org/ videos/ natural-resources-lesson-plan Mapping our human footprint Perils of plastic Protecting Earth's wildlife http://www.nationalgeographic.co m/xpeditions/lessons/14/ g68/HumanFootprint.pdf Clean Water Challenge 	• Clean Water Challenge (lab)

Possible Assessment Modifications /Accommodations/Differentiation:				
Special Education	English Language Learners	At Risk Students	Gifted Students	
Accommodations	Accommodations	Accommodations	Differentiation	
Additional timeVary test formats	 Allow for oral follow up to written responses 	Allow retakesUse of a checklist as a timeline	 Multiple texts (leveled reading) Individualized 	
		tool	assessment/independent	

Possible Assessment Modifications /Accommodations/Differentiation:				
Graphic organizers for written	Modifications		study additional research into	
tasks	Oral testing	<u>Modifications</u>	topics	
	Simplify instructions	Make all or part of the exam oral		
Modifications		<u>Differentiation</u>		
Oral testing	Differentiation	 Multiple texts (leveled reading) 		
 Shortened assessments 	 Multiple texts (leveled reading) 			
Simplify task directions				
 <u>Differentiation</u> Multiple texts (leveled reading) Small group administration of classroom tests/quizzes as needed and/or available 				

Instruct	tional Strategies
• Stru	uctured Overview
• Rea	ding
• Brai	instorming
• Thir	nk, Pair, Share
• Coo	operative Learning Groups
• Stru	uctured Controversy
• Wri	ting to Inform
• Essa	ays
• Res	earch Projects
• Assi	igned Questions
• Sim	ulations
• Exp	laining
• Leve	els of Questions

Possible Instructional Modifications /Accommodations/Differentiation				
Special Education	English Language Learners	At Risk Students	Gifted Students	
Accommodations Directions repeated/clarified Graphic organizers 	Accommodations • Graphic organizers <u>Modifications</u> • Reword problems in simplified	Accommodations • Graphic organizers • Review directions individually Differentiation	 <u>Differentiation</u> Provide learning centers where students are in charge of their learning Brainstorm with gifted children 	
 Change level of difficulty using choice boards <u>Differentiation</u> Small group instruction 	language <u>Differentiation</u> • Preteach vocabulary • Cooperative learning	 One on one conferences Flexible grouping 	on what types of projects they would like to explore to extend what they're learning in the classroom.	

Unit Vocabulary Essential: Water distribution, fresh water, salt water, invasive species, climate change, air pollution, Ozone layer depletion

Non-Essential: Pollution, diseases and fungus, water quality, over population, endangered species, industrialized agriculture, land pollution

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
<u>Literacy-</u>	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NJSLS-RI.5.1: Quote accurately from a	document using a word processing		 Students plan and conduct
text when explaining what the text says	application to enhance text		scientific investigations and write
explicitly and when drawing inferences	and include graphics, symbols		detailed explanations based on
from the text. (5-ESS3-1)	and/ or pictures.		their evidence. Students compare
			their explanations to those made
	NJ SLS 8.1.5.D.2: Analyze the		by scientists and relate them to
NJSLS-RI.5.7: Draw on information	resource citations in online		their own understandings of the
from multiple print or digital sources,	materials for proper use.		natural and designed worlds.
demonstrating the ability to locate an			
answer to a question quickly or to solve	NJ SLS 8.2.5.B.3: Investigate ways		<u>Communication</u>



Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
Interdisciplinary Connections (Applicable Standards) a problem efficiently. (5-ESS2-2), (5- ESS3-1) NJSLS-W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2), (5-ESS3-1) NJSLS-RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1) NJSLS-W.5.9: Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1) Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-2) SL.5.5 <u>Mathematics-</u> NJSLS-MP.2: Reason abstractly and	Integration of Technology that various technologies are being developed and used to reduce improper use of resources. NJ SLS 8.2.5.B.4: Research technologies that have changed due to society's changing needs and wants. NJ SLS 8.2.5.C.4: Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models. NJ SLS 8.2.5.D.6: Explain the positive and negative effect of products and systems on humans, other species and the environment, and when the product or system should be used.	21 st Century Themes	 21st Century Skills Students can identify conventions for writing and speaking scientifically that distinguish scientific communication from other types of expression, and describe reasons behind those differences such as the need in science for precision, detail, and evidence over opinion. <u>Collaboration (Civic Literacy)</u> Students work collaboratively with others, either virtually or face-to-face, while participating in scientific discussions and appropriately using claims, evidence, and reasoning. <u>Information Literacy (Health Literacy)</u> Students are able to locate reliable scientific information in reputable reference books, back issues of journals and magazines, on websites, and in computer databases. <u>Media Literacy (Financial Literacy)</u> Students are able to identify and
NJSLS-MP.4: Model with mathematics.			 Students are able to identify and critique arguments in which the claims are not consistent with the evidence given.
(3-E332-2), (3-E333-1)			Leadership and Responsibility

Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
			 Students understand the importance of proper citations and respect for intellectual property rights.

Resources

Text:

• Science (2005). Orlando, FL: Harcourt

Materials:

• Chomebooks, science articles, Google slides, worksheets, poster board, coloring supplies, punch bowl, glitter, grass, vegetable oil, grass, coffee grounds

Unit 5: Earth Systems	Recommended Duration: (4 weeks)

In this unit of study, students are able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. The crosscutting concept of systems and system models is called out as an organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in developing and using models, obtaining, evaluating, and communicating information. Students are also expected to use these practices to demonstrate understanding of the core ideas.

Description of abstract from: <u>http://www.nj.gov/education/modelcurriculum/sci/5u5.pdf</u>

Essential Questions	Enduring Understandings
 Do all of the spheres rely on each other to exist? What would happen to Earth if one sphere was damaged? 	 How does the biosphere rely on the hydrosphere, geosphere, and atmosphere to exist? What would happen to Earth if one sphere was removed?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power NJ SLS 5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. NJ SLS 5-ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.	NJ SLS 5-ESS2-1: Students will understand that 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). (3 weeks) NJ SLS 5-ESS3-1: Students will understand that 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. (1 week)	 NJ SLS 5-ESS2-1: Students will be able to explain what encompasses the biosphere, hydrosphere, geosphere, and the atmosphere. Students will be able to explain how each of these systems interact with each other. Students will be able to explain how each sphere relies on each other to exist.

Formative Assessments	Summative Assessments	Performance Assessments	Major Activities/ Assignments (required)
Daily Warm up	Unit assessment	Task cards	Earth system's jigsaw
Exit Slips	Earth system's jigsaw	I can statements	Earth system's island survival
Teacher observation			Hydrosphere creative writing
Self-Reflection writing			Biosphere research
White board review			Atmosphere mnemonic device
• Scoot			Geosphere student made quiz
Task Cards			
 Educational games 			

Possible Assessment Modifications /A	ccommodations/Differentiation:		
Special Education	English Language Learners	At Risk Students	Gifted Students
Accommodations	<u>Accommodations</u>	Accommodations	<u>Differentiation</u>
 Additional time on assessments 	Allow for oral follow up to	 Have students verbally 	 Allow students to complete
 Vary test formats 	written responses	summarize questions or tasks	extension activity that goes
 Graphic organizers for written 		before completing	beyond the assessment
tasks	Modifications		
• Follow up questions to expand	Oral testing	Differentiation	
on responses	Simplify instructions	 Multiple texts (leveled reading) 	
	Scaffold test questions		
Modifications			
Oral testing	Differentiation		
 Shortened assessments 	Multiple texts (leveled reading)		
 Simplify task directions 			
Differentiation			
 Multiple texts (leveled reading) 			
Small group administration of			
classroom tests/quizzes as			
needed and/or available			

Instructional Strategies

- Structured Overview
- Reading
- Brainstorming
- Think, Pair, Share
- Cooperative Learning Groups
- Structured Controversy
- Writing to Inform
- Essays
- Research Projects
- Assigned Questions
- Simulations
- Explaining
- Levels of Questions

Possible Instructional Modifications /Accommodations/Differentiation			
Special Education	English Language Learners	At Risk Students	Gifted Students
 <u>Accommodations</u> Model expectations for notes/activity Graphic organizers 	 <u>Accommodations</u> Graphic organizers Have students clarify/summarize directions 	 <u>Accommodations</u> Graphic organizers Review directions individually 	<u>Differentiation</u> Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment.
 <u>Modifications</u> Change level of difficulty using choice boards 	 Modifications Reword problems in simplified language 	Flexible grouping	
 <u>Differentiation</u> Small group instruction 	 <u>Differentiation</u> Preteach vocabulary Cooperative learning 		

Unit Vocabulary

Essential: system, geosphere, atmosphere, biosphere, hydrosphere, water cycle, precipitation, condensation, evaporation, infiltration, runoff, transpiration

Non-Essential: theory of plate tectonics, plate boundaries, troposphere, stratosphere, mesosphere, thermosphere, ionosphere, exosphere

Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
Literacy-	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NJSLS-RI.5.1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1)	document using a word processing application to enhance text and include graphics, symbols and/ or pictures.		 Students plan and conduct scientific investigations and write detailed explanations based on their evidence. Students compare their explanations to those made
NJSLS-RI.5.7: Draw on information from multiple print or digital sources,	NJ SLS 8.1.5.D.2: Analyze the resource citations in online materials for proper use.		by scientists and relate them to their own understandings of the natural and designed worlds.
answer to a question quickly or to solve a problem efficiently. (5-ESS2-1), (5- ESS3-1)	NJ SLS 8.2.5.B.3: Investigate ways that various technologies are being developed and used to reduce improper use of resources.		 <u>Communication</u> Students can identify conventions for writing and speaking scientifically that distinguish
NJSLS-W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of	NJ SLS 8.2.5.B.4: Research technologies that have changed due to society's changing needs and wants.		scientific communication from other types of expression, and describe reasons behind those differences such as the need in science for precision, detail, and evidence over opinion.
NJSLS-RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1)	NJ SLS 8.2.5.C.4: Collaborate and brainstorm with peers to solve a problem evaluating all solutions to provide the best results with supporting sketches or models.		 <u>Collaboration (Civic Literacy)</u> Students work collaboratively with others, either virtually or face-to-face, while participating in calontific discussions and
NJSLS-W.5.9: Draw evidence from literary or informational texts to	NJ SLS 8.2.5.D.6: Explain the		appropriately using claims,

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Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
support analysis, reflection, and research. (5-ESS3-1)	positive and negative effect of products and systems on humans,		evidence, and reasoning.
NJSLS-SL.5.5: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-2),(5-ESS2-1)	other species and the environment, and when the product or system should be used.		 Information Literacy (Health Literacy) Students are able to locate reliable scientific information in reputable reference books, back issues of journals and magazines, on websites, and in computer databases.
<u>Mathematics-</u> NJSLS-MP.2: Reason abstractly and quantitatively. (5-ESS2-1), (5-ESS3-1)			 Media Literacy (Financial Literacy) Students are able to identify and critique arguments in which the claims are not consistent with the
NJSLS-MP.4: Model with mathematics. (5-ESS2-1), (5-ESS3-1)			evidence given. Leadership and Responsibility
NJSLS-5.G.A.2 : Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1)			 Students understand the importance of proper citations and respect for intellectual property rights.

Resour	lesources		
Text:			
•	Science (2005). Orlando, FL: Harcourt		

Materials:

• Chomebooks, science articles, Google slides, worksheets, earth system laminated packets, coloring supplies

In this unit of study, students develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. The crosscutting concepts of patterns, cause and effect, and scale, proportion, and quantity are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in analyzing and interpreting data and engaging in argument from evidence. Students are also expected to use these practices to demonstrate an understanding of the core ideas

Description of abstract from: <u>http://www.nj.gov/education/modelcurriculum/sci/5u6.pdf</u>

Essential Questions	Enduring Understandings
 Is gravity an attractive force? How did Sir Isaac Newton discover gravity? What determines the brightness of a star? What is the difference between rotating and revolving? Why does the Sun rise and set? Who set the first clock? Why do the stars change with the seasons? How can the Sun tell you the season? Why doesn't the moon always look round? What are the wandering stars? 	 What would Earth be like if gravity wasn't present? What makes gravity stronger or weaker in the universe? Does the distance away from Earth impact the brightness of stars? How does revolving and rotating effect how we can tell time on Earth?

Relevant Standards	Learning Goals	Learning Objectives
Content Standards: Primary or Power NJ SLS 5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.	NJ SLS 5-PS2-1 Students will understand that the gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's	 NJ SLS 5-PS2-1 Students will be able to explain gravitational force. Students will be able to demonstrate the force of gravity.
	center. (1 week)	

Relevant Standards	Learning Goals	Learning Objectives
NJ SLS 5-ESS1-1: Support an argument that the apparent brightness of the sun and stars is due to their relative distances from the Earth. NJ SLS 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 SLS 5-ESS1-1: Students will understand that 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. (1 week) NJ SLS 5-ESS1-2: Students will understand that the orbits of Earth around the sun and of the 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. (2 weeks)	 NJ SLS 5-ESS1-1: Students will be able to explain what would make a star appear larger and brighter. NJ SLS 5-ESS1-2: Students will be able to explain how the Earth moves in the solar system. Students will be able to explain how we can measure time as the Earth rotates and revolves. Students will be able to explain the difference between rotation and revolving.

Formative Assessments	Summative Assessments	Performance Assessments	Major Activities/ Assignments (required)
Daily Warm up	Unit assessment	Task cards	Rewrite history, how did Sir Isaac
Exit Slips		I can statements	Newton discover gravity?
 Teacher observation 		Mystery Science	
 Self-Reflection writing 			
White board review			
• Scoot			
Task Cards			
 Educational games 			

Possible Assessment Modifications /Accommodations/Differentiation:			
Special Education	English Language Learners	At Risk Students	Gifted Students
Accommodations	Accommodations	Accommodations	Differentiation
Additional time on assessments	Allow for oral follow up to	Have students verbally	Allow students to complete

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Possible Assessment Modifications /A	ccommodations/Differentiation:		
Vary test formats	written responses	summarize questions or tasks	extension activity that goes
Graphic organizers for written		before completing	beyond the assessment
tasks	Modifications		
• Follow up questions to expand	Oral testing	Differentiation	
on responses	Simplify instructions	 Multiple texts (leveled reading) 	
	Scaffold test questions		
<u>Modifications</u>			
Oral testing	Differentiation		
 Shortened assessments 	 Multiple texts (leveled reading) 		
 Simplify task directions 			
Differentiation			
 Multiple texts (leveled reading) 			
Small group administration of			
classroom tests/quizzes as			
needed and/or available			

Instructional Strategies

- Structured Overview
- Reading
- Brainstorming
- Think, Pair, Share
- Cooperative Learning Groups
- Structured Controversy
- Writing to Inform
- Essays
- Research Projects
- Assigned Questions
- Simulations
- Explaining
- Levels of Questions

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Possible Instructional Modifications /Accommodations/Differentiation			
Special Education	English Language Learners	At Risk Students	Gifted Students
 <u>Accommodations</u> Model expectations for notes/activity Graphic organizers 	 <u>Accommodations</u> Graphic organizers Have students clarify/summarize directions 	Accommodations Graphic organizers Review directions individually 	<u>Differentiation</u> Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment.
 Modifications Change level of difficulty using choice boards 	 Modifications Reword problems in simplified language 	Flexible grouping	
 <u>Differentiation</u> Small group instruction 	 <u>Differentiation</u> Preteach vocabulary Cooperative learning 		

Unit Vocabulary

Essential: attractive force, gravity, rotating, revolving, axis

Non-Essential: Sir Isaac Newton, brightness, sun, moon, Earth

Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
<u>Literacy-</u>	NJ SLS 8.1.5.A.2: Format a	_X_ Health Literacy	Creative Thinking and Problem Solving
NISIS-BI 5 1: Quote accurately from a	document using a word processing		 Students plan and conduct
text when explaining what the text says	application to enhance text		scientific investigations and write
explicitly and when drawing inferences	and include graphics, symbols		detailed explanations based on
from the text (5-PS2-1) (5-ESS1-1)	and/ or pictures.		their evidence. Students compare
$\begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 0 $			their explanations to those made
NJSLS-RI.5.7: Draw on information	NJ SLS 8.1.5.D.2: Analyze the		by scientists and relate them to
from multiple print or digital sources,	resource citations in online		their own understandings of the
demonstrating the ability to locate an	materials for proper use.		natural and designed worlds.



Interdisciplinary Connections	Integration of Technology	21 st Century Themes	21 st Century Skills
(Applicable Standards)			
answer to a question quickly or to solve			
a problem efficiently. (5-ESS1-1)	NJ SLS 8.2.5.B.3: Investigate ways		Communication
NJSLS-RI.5.8: Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support	that various technologies are being developed and used to reduce improper use of resources.		Students can identify conventions for writing and speaking scientifically that distinguish scientific communication from other types of expression, and
which point(s). (5-ESS1-1)	tochnologies that have changed		describe reasons behind these
NJSLS-RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1), (5-	due to society's changing needs and wants. NJ SLS 8.2.5.C.4: Collaborate and		differences such as the need in science for precision, detail, and evidence over opinion.
ESS1-1)	brainstorm with peers to solve a		Collaboration (Civic Literacy)
NJSLS-W.5.1: Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1), (5-ESS1-1)	problem evaluating all solutions to provide the best results with supporting sketches or models. NJ SLS 8.2.5.D.6: Explain the positive and negative effect of		 Students work collaboratively with others, either virtually or face-to-face, while participating in scientific discussions and appropriately using claims, evidence, and reasoning.
NJSLS-SL.5.5: Include multimedia	products and systems on humans,		
components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS1-2)	other species and the environment, and when the product or system should be used.		 Information Literacy (Health Literacy) Students are able to locate reliable scientific information in reputable reference books, back issues of journals and magazines, on websites, and in computer
Mathematics-			databases.
NJSLS-MP.2: Reason abstractly and quantitatively. (5-ESS1-1),(5-ESS1-2)			 Media Literacy (Financial Literacy) Students are able to identify and
NJSLS-MP.4: Model with mathematics. (5-ESS1-1), (5-ESS1-2)			critique arguments in which the claims are not consistent with the evidence given.

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Interdisciplinary Connections (Applicable Standards)	Integration of Technology	21 st Century Themes	21 st Century Skills
NJSLS-5.NBT.A.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5- ESS1-1)			 <u>Leadership and Responsibility</u> Students understand the importance of proper citations and respect for intellectual property rights.
NJSLS-5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)			

Resources

Text:

• Science (2005). Orlando, FL: Harcourt

Materials:

• Chomebooks, science articles, Google slides, worksheets, fasteners, coloring supplies, flashlights