Unit Title: Earth in Space

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

<u>MS-ESS1-1.</u>

Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.

MS-ESS1-2.

Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.

MS-ESS1-3.

Analyze and interpret data to determine scale properties of objects in the solar system.

<u>MS-PS2-4.</u>

Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.

MS-PS2-5.

Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

MS-LS1-6.

Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

Science and Engineering Practices (SEP)

- Engaging in Argument from Evidence- Engaging in argument from evidence in 6–8 builds from grades K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world. Construct and present oral and written arguments supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-PS2-4)
- Constructing Explanations and Designing Solutions- Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories. Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-LS1-5), (MS-LS1-6) (MS-ESS1-4)
- **Developing and Using Models-** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop and use a model to describe phenomena. (MS-ESS1-1), (MS-ESS1-2)
- **Analyzing and Interpreting Data** Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic

statistical techniques of data and error analysis. Analyze and interpret data to determine similarities and differences in findings. (MS-ESS1-3)

Disciplinary Core Ideas (DCI)

- Gravitational forces are always attractive. There is a gravitational force between any two masses, but it is very small except when one or both of the objects have large mass—e.g., Earth and the sun. (MS-PS2-4)
- Forces that act at a distance (electric, magnetic, and gravitational) can be explained by fields that extend through space and can be mapped by their effect on a test object (a charged object, or a ball, respectively). (MS-PS2-5)
- Plants, algae (including phytoplankton), and many microorganisms use the energy from light to make sugars (food) from carbon dioxide from the atmosphere and water through the process of photosynthesis, which also releases oxygen. These sugars can be used immediately or stored for growth or later use. (MS-LS1-6)
- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2), (MSESS1-3)
- This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. (MS-ESS1-1)
- The solar system appears to have formed from a disk of dust and gas, drawn together by gravity. (MS-ESS1-2)
- The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4)

Crosscutting Concepts (CCC)

- **Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-PS2-3), (MS-PS2-5)
- Systems and System Models Models can be used to represent systems and their interactions— such as inputs, processes and outputs—and energy and matter flows within systems. (MS-PS2-1), (MS-PS2-4), (MS-ESS1-2)
- Scientific Knowledge is Based on Empirical Evidence -Science knowledge is based upon logical and conceptual connections between evidence and explanations. (MS-PS2-2), (MS-PS2-4)(MS-LS1-6)
- Energy and Matter -Within a natural system, the transfer of energy drives the motion and/or cycling of matter. (MS-LS1-6)
- Patterns Patterns can be used to identify cause-and-effect relationships. (MS-ESS1-1)
- Scale, Proportion, and Quantity- Time, space, and energy phenomena can be observed at various scales using models to study systems that are too large or too small. (MS-ESS1-3), (MSESS1-4)
- Interdependence of Science, Engineering, and Technology -Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems. (MS-ESS1-3)
- Scientific Knowledge Assumes an Order and Consistency in Natural Systems Science assumes that objects and events in natural systems occur in consistent patterns that are understandable through measurement and observation. (MS-ESS1-1), (MS-ESS1-2)

Career Readiness, Life Literacies and Key Skills			
Standard	Performance	Expectations	Core Ideas
9.4.8.Cl.1	Assess data gathered of on causes of climate ch cultural, gender-specific determine how the data design multiple potentia 6.SP.B.5, 7.1.NH.IPERS	on varying perspectives hange (e.g., cross c, generational), and a can best be used to al solutions (e.g., RI.7.9, S.6, 8.2.8.ETW.4).	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.
9.4.8.01.4	career pathways and in	dustries.	
9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).		Multiple solutions often exist to solve a problem.
9.4.8.DC.1 9.4.8.DC.2	Analyze the resource citations in online materials for proper use. Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).		Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own work.
9.4.8.DC.7	Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.		Digital communities are used by individuals to share information, organize, and engage around issues and topics of interest.
9.4.8.DC.8	Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).		Digital technology and data can be leveraged by communities to address effects of climate change.
9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).		Sources of information are evaluated for accuracy and relevance when considering the use of information.
9.4.8.TL.2 9.4.8.TL.3	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4). Select appropriate tools to organize and present information digitally.		Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.
Central Idea/Enduring Un	derstanding:	Essential/Guiding Que	estion:
Where is Earth in the Unive related to other objects in the	rse, and how is Earth ne universe?	How is the univ	erse structured?

How do the solar system and its objects affect life on Earth?	 What properties of the solar system and its objects help explain why Earth is habitable for life? What objects are in the solar system? How does Earth compare with other objects in the solar system? What causes the moon to change shape? What causes seasons on Earth? What is the role of photosynthesis in the cycling of matter and flow of energy into and out of an organism? How does the Moon affect Earth? How do solar and lunar eclipses differ? Why do the solar system and its objects move like they do? Can you apply a force on something without touching it? How does gravity influence the shape and the motion of objects in the solar system? If I were able to eliminate air resistance and dropped a feather and a hammer at the same time, which would land first?
OpenSciEd: Earth in Space Lesson 1: How are we connected to the patterns we see in the sky? Lesson 2: What patterns are happening in the sky that I have experienced and can observe (through models and tools)? Lesson 3: How can we explain the Sun's path change over time? Lesson 4: How do these changes in sunlight impact us here on Earth? Lesson 5: How can we explain phenomena like Manhattanhenge? Lesson 6: Why do we see the shape of the Moon change? Lesson 7: Why do we see eclipses and when do we see them? Lesson 8: What does a lunar eclipse look like and how can we explain it? Lesson 9: Why do the Moon and Sun appear to change color near the horizon? Lesson 10: How does light interact with matter in the atmosphere? Lesson 11: How does the shape of a water droplet or an ice crystal cause sunlight to form into a rainbow? Lesson 12: Why does the Moon always change color during a lunar eclipse? Lesson 13: What new patterns do we see when we look more closely at other objects in the sky?	 Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. Analyze and interpret data to determine scale properties of objects in the solar system. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. Cite specific textual evidence to support analysis of science and technical texts. Integrate quantitative or technical information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Lesson 14: Why do some solar system objects orbit planets and others orbit the Sun? 257 Lesson 15: How did the solar system get to be the way it is today? Lesson 16: What patterns and phenomena are beyond our solar system that we cannot see with just our eyes? Lesson 17: How are we connected to all of the systems in space beyond the planet we live on? Investigation 1: What properties of the solar system and its objects help explain why Earth is habitable for life? a. Objects that make up our solar system b. Earth's place / Universe > Galaxy > Solar System > Sun > Planet c. Scale/size d. Goldilocks Zone/Kepler Mission Investigation 2: Does the moon affect life on Earth? (Earth-Moon-Sun System) a. What causes the moon to change shape? i. Moon Phases b. Do the seasons affect life on Earth? i. Tilt/Direct vs indirect sunlight ii. Photosynthesis c. Do eclipses prove the moon changes sizes? i. Distance perception/Eclipse models ii. Tides Investigation 3: Why do the solar system and its objects move like they do? a. Gravity / predictable, consistent, orbital motion b. Size of objects and distance between objects	 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. Conduct short research projects to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. Reason abstractly and quantitatively. Write arguments focused on discipline-specific content. Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. Draw evidence from informational texts to support analysis, reflection, and research.
ELA/Literacy -NJSLS RST.6-8.1 Cite specific textual evidence to support at RST.6-8.2 Determine the central ideas or conclusions prior knowledge or opinions.	nalysis of science and technical texts. s of a text; provide an accurate summary of the text distinct from

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

Mathematics -NJSLS

MP.4 Model with mathematics. (MS-ESS1-1)

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

7.RP.A.2 Recognize and represent proportional relationships between quantities.

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7.EE.B.6 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Stage 2: Assessment Evidence

Performance Task(s):		<u>Fask(s):</u>	Other Evidence:	
 Sun-Earth-Moon models demonstrating: to 		arth-Moon models demonstrating: to	Do Nows	
scale, moon phases, eclipses,		moon phases, eclipses,	Classwork	
direct/indirect sunlight, seasons, rotation,		ndirect sunlight, seasons, rotation,	Interactive Notebook	
	revolut	ion, tilted axis, orbital path,	Class discussions	
	gravita	tional pull	Closure activities (ex. exit tickets, kahoots, KWL charts)	
•	Goldilo	cks Zone CER	Personal digital responses (Kahoot, Quizizz, Quizlet, etc.)	
•	Moon F	Phase Cookie CFA	Homework	
•	Edulas	tic Unit 1 Assessment	Teacher observation	
			Graphic Organizers	
			Scientific inquiry analysis	
			Common Formative Assessments	
			Summative Unit Assessments	
		Stage 3	: Learning Plan	
Loarni		artunities/Strategies:	Posourcos:	
Learning Opportunities/Strategies:		Models: what they are and how to	<u>Nesources.</u> OnonSciEd: Earth in Space	
Λ.	use the	models. What they are and now to	Lesson 1: How are we connected to the natterns we see in the	
a Disturse Labele Arrows		Pictures Labels Arrows	akv?	
	a. h	Solar system 2.0 model video	Lesson 2: What patterns are happening in the sky that I have	
B. Intro to Systems: what they are and how to		Systems: what they are and how to	experienced and can observe (through models and tools)?	
υ.	model	them	Lesson 3. How can we explain the Sun's path change over	
	a	Components Boundaries Flow	time?	
	ч.	(input/output interactions)	Lesson 4. How do these changes in sunlight impact us here on	
C.	CER	(input/output, interdetione)	Earth?	
•	а.	evidence chart in notebook AT	Lesson 5: How can we explain phenomena like	
		START	Manhattanhenge?	
	b.	Sentence starters: use in	Lesson 6: Why do we see the shape of the Moon change?	
		response/discussion	Lesson 7: Why do we see eclipses and when do we see them?	
	C.	Examples	Lesson 8: What does a lunar eclipse look like and how can we	
		i. My Dad is an Alien	explain it?	
		ii. Sheryl's She Shed	Lesson 9: Why do the Moon and Sun appear to change color	
	d.	practice with "one does not belong	near the horizon?	
		4 image search"	Lesson 10: How does light interact with matter in the	
		-	atmosphere?	

	e. Review rubric: rate pre written		Lesson 1	1: How does the shape of a water droplet or an ice	
	sentences/paragraphs		crystal ca	ause sunlight to form into a rainbow?	
	f.	. Break apart a paragraph and		Lesson 1	2: Why does the Moon always change color during a
		piece it back together		lunar ecli	pse?
	g.	Observ	ations and Inferences	Lesson 1	3: What new patterns do we see when we look more
		practice	9	closely at	t other objects in the sky? Lesson 14: Why do some
		i.	Perception/optical illusions	solar syst	tem objects orbit planets and others orbit the Sun?
		ii.	"What Am I?" Lab with	257 Less	on 15: How did the solar system get to be the way it
			random objects	is today?	
D.	To Scal	е	-	Lesson 1	16: What patterns and phenomena are beyond our
	a.	three o	bjects to represent sun,	solar syst	tem that we cannot see with just our eyes?
		earth a	nd moon	Lesson 1	7: How are we connected to all of the systems in
	b.	Classif	v/compare images	space be	vond the planet we live on?
E.	Catego	rizina ot	piects		
	a.	shoes.	then random objects		
	b	Solar s	vstem objects sort	- (-	Set Ready to Read
	ν.	i	"Gallery walk"/students	- 1	aunch Labs
			review others work	- 0	Content Vocabulary
	C	which o	ne doesn't belong	- M	linil abs
F	Goldilor	cks Stor	v "Just right"	- 0	Content Practice worksheets
•••	a	Kenler	Mission Article	- N	Aath Skills
G	Gravity	Repici	Mission Attole		- Prichment
0.	oravity	swingin	a bucket of water model		hallenge
	a. h	tua o M	or (more mass, more	- 0	
	D.	atropat		- L	
		stiengt	II)	- L	aus (av Canaant Builder activities
Ц	C.		bana ia lika tha traak in DE		New Concept Builder activities
п.				- 0	
١.	Rotatio		volution	- 0	Dhine quiz
a. Day & Night: a clock, passing time		- (Jniine Standardized Test Practice		
J. Moon Phases					
	a.	amerer	nt models comparison	YouTube	VIGEOS
	D.	MONT	H LONG Moon Observation	BrainPop	VIGEOS
		calenda	ar Mar	Flocabula	ary
	C.	Birthda	y woon Phase	⊨apuzzle	
	d.	Doodle		ivewsela	
	e.	⊢lashliq	gnt model/demo	Readworks.org	
Κ.	Eclipse			Scholasti	c Science World magazine
	а.	article		Kesler Sc	cience Resources
	b.	tlashlig	ht model/demo	Edulastic	
L. Seasons		IXL			
	а.	Direct	/s indirect		
		i.	basketball: bounce pass	LGBT and	d Disabilities Resources:
			vs chest pass (intensity)	• <u>L</u>	<u>GBTQ-Inclusive Lesson & Resources by Garden</u>
		ii.	Barrow, AK two months of	<u>S</u>	State Equality and Make it Better for Youth
			no sunrise (TILT)	• <u>L</u>	<u>.GBTQ+ Books</u>
		iii.	Photosynthesis		
	b.	Doodle	Notes	DEI Reso	ources:
М.	READ			• <u>L</u>	earning for Justice
	a.	Hidden	Figures	• 🤆	GLSEN Educator Resources
				• <u>S</u>	Supporting LGBTQIA Youth Resource List
Teachir	ng Scient	tific Prac	ctices	• <u>R</u>	Respect Ability: Fighting Stigmas, Advancing
				<u>C</u>	<u>Dpportunities</u>

 Guide students through appropriate laboratory techniques (safety, accuracy, frequency, data collection, etc.) Students will utilize the engineering and design process to ask questions, plan and carry out investigations, refine models, design solutions, construct explanations, and design solutions. 	 <u>NJDOE Diversity, Equity & Inclusion Educational</u> <u>Resources</u> <u>Diversity Calendar</u>
 Literacies Use reading strategies to read non-fiction text (preview, question, reflect, highlight, recite, review, utilize text structure, etc.) Digital tools - utilize features available on ebooks such as highlighting, bookmarking, linking to more information, etc. Digital literacy - Find and evaluate digital sources. Communicate clearly using digital platforms 	
Questioning - Present guiding leveled questions to students. See differentiation section for specific questions.	
 Formative assessment response modalities Teacher/student question discussion Thumbs up/thumbs down Rate yourself on understanding on a fist to five scale Google Forms Digital polling devices (Kahoot, Quizizz, etc.) Exit tickets/responses Whiteboards 	
 Learning Strategies Think, Pair, Share Direct instruction Jigsaw Cooperative groups Discussion in class and discussion boards Socratic Seminar 	
 Learning Management Google Classroom - share information with students, post assignments, collect feedback Google Docs & Google Slides - creation and presentation tools 	

Differentiation *Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving Students	On Grade Level Students	Struggling Students	Special Needs/ELL
Interactive Science notebooks - higher level of Costa's questions created	Interactive Science notebooks Provide challenging tasks with support to	Interactive Science notebooks - templates provided by teacher Break down	Any student requiring further accommodations and/or modifications will have them individually listed in their 504 Plan or IEP. These might include, but are not limited to:
Less structure provided for assignments/assessment	allow students to experience success	assignments into smaller tasks	breaking assignments into smaller tasks, giving directions through several channels (auditory, visual,
s .	Moderate amount of scaffold on	Structured, predictable classroom	kinesthetic, model), and/or small group instruction for reading/writing
Heterogeneous grouping	Assignments	Graphic	ELL supports should include, but are
or collaboratively with minimal teacher guidance	grouping	guides provided	Extended time Provide visual aids
Laboratory investigations designed and carried out by students	Laboratory investigations designed by students with teacher	Copy of class notes/presentation provided to student	Repeated directions Differentiate based on proficiency Provide word banks Allow for translators, dictionaries
Independent Reading	assistance and carried out by students	Utilize student's best personal learning modality (auditory.	
Marking the text on Device	Students work in groups generating	visual, kinesthetic) Heterogeneous	
Using a graphic organizer for essay, bullet main	notes on a specific reading.	grouping	
essay.	Project based learning using	investigations provided by teacher	
Student generates notes on class readings.	technology Provide any readings	for students to carry out	
Project based learning using technology	on grade level based on a topic being covered in class	Audio of the book/readings read to the whole class	
Provide a higher grade level readings based on topic being covered in class	Students meet with those from other groups that read the same material to	Marking the text and teacher guiding the practice	
Students read their assigned material independently	discuss what was most important and what needs to be	Using level 1 and 2 questioning	
Provide opportunity for students to respond and reflect on day's learning.	taught to their groups. Keep a stack of blank index cards on hand to give to students at	Using a graphic organizer for essay. Organizer must be completely filled out before proceeding	
	the end of class. Have students	with essay.	

3-4 week independent study projects intended to provide enrichment	respond on the card to something from the day's lesson.	Students use teacher generated notes while filling in missing information.	
		Project based learning using technology - In groups develop a google slide presentation	
		Project based learning - 2 paragraph writing incorporated with visual aid	
		Provide a book that is a grade or two lower and pair them with a higher functioning student	
		Students meet with their small groups and to share what they've learned with each other. Follow with whole group discussion of the most important points.	
		Complete a "What I Learned" Chart.	

Unit Title: Plate Tectonics & Rock Cycling

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

<u>MS-ESS1-4.</u>

Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.

<u>MS-ESS2-1.</u>

Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

MS-ESS2-2.

Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

<u>MS-ESS2-3.</u>

Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.

MS-ESS2-4.

Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

MS-ESS3-1.

Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

Science and Engineering Practices (SEP)

- Constructing Explanations and Designing Solutions- Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific knowledge, principles, and theories. Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future. (MS-ESS2-2)(MS-ESS3-1)
- **Developing and Using Models-** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop a model to describe unobservable mechanisms (MS-ESS2-4). Develop and use a model to describe phenomena. (MS-ESS2-1).
- Analyzing and Interpreting Data Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. Analyze and interpret data to provide evidence for phenomena. (MS-ESS2-3)

Disciplinary Core Ideas (DCI)

- Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes. (MS-ESS3-1)
- The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4)
- All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms. (MS-ESS2-1)
- The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)
- Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. (MS-ESS2-3)

 Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. (MS-ESS2-4) Global movements of water and its changes in form are propelled by sunlight and gravity. (MS-ESS2-4) Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2) <u>Crosscutting Concepts (CCC)</u> Cause and Effect - Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-1) Scientific Knowledge is Based on Empirical Evidence -Science knowledge is based upon logical and conceptual connections between evidence and explanations. (MS-PS2-2) 				
Energy and Matter matter. (MS-ESS 2-	 Within a natural system, the transfer of energy di 4) 	rives the motion and/or cycling of		
 Patterns - Patterns Scale, Proportion, using models to stu 	can be used to identify cause-and-effect relations and Quantity- Time, space, and energy phenom dy systems that are too large or too small. (MS-ES	hips. (MS-ESS2-3) ena can be observed at various scales SS2-2). (MS-ESS1-4)		
Stability and Chan constructed by exar scale. (MS-ESS2-1)	 Stability and Change- Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale. (MS-ESS2-1) 			
Scientific Knowledge is Open to Revision in Light of New Evidence- Science findings are frequently revised and/or reinterpreted based on new evidence. (MS-ESS2-3)				
Gareer Readiness, Life Liferacies and Key Skills				
Standard	Performance Expectations	Core Ideas		
9.4.8.Cl.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.		
9.4.8.Cl.4	.4.8.CI.4 Explore the role of creativity and innovation in career pathways and industries.			
9.4.8.CT.1	.4.8.CT.1 Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).			
9.4.8.DC.1	Analyze the resource citations in online materials for proper use.	Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own work.		
9.4.8.DC.2 Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).				

9.4.8.DC.7	Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.		Digital communities are used by individuals to share information, organize, and engage around issues and topics of interest.
9.4.8.DC.8	Explain how communiti technology to develop r effects of climate chang	es use data and neasures to respond to ge (e.g., smart cities).	Digital technology and data can be leveraged by communities to address effects of climate change.
9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8 Civics DP.4 b, 7.1 NH, UPPET 8)		Sources of information are evaluated for accuracy and relevance when considering the use of information.
9.4.8.TL.2 9.4.8.TL.3	Gather data and digitally represent information to communicate a real-world problem (e.g., MS-ESS3-4, 6.1.8.EconET.1, 6.1.8.CivicsPR.4). Select appropriate tools to organize and present information digitally.		Some digital tools are appropriate for gathering, organizing, analyzing, and presenting information, while other types of digital tools are appropriate for creating text, visualizations, models, and communicating with others.
Central Idea/Enduring Understanding: If no one was there, how do we know the Earth's history? How do people figure out that the Earth and life on Earth have changed over time? How does the movement of tectonic plates impact the surface of Earth? What provides the forces that drive Earth's systems? How do the materials in and on Earth's crust change over time?		 Essential/Guiding Que How do we kno 4.6-billion-year- Do all of the cha time scales? How is it possible found in New Je What are the co atmosphere? What are the co geosphere? What are the co geosphere? How does the re Systems? What is the theo What are the di convergent, and What causes te surface? How are landfor How does plate What is the difference What is the difference What is the difference How do water id 	estion: w that the Earth is approximately old history? anges to Earth systems occur in similar le for the same kind of fossils to be ersey and in Africa? omposition and structure of the 's Systems? omposition and structure of the ock cycle show interactions of Earth ory of plate tectonics? fferences between divergent, d transform plate boundaries? ctonic plates to move on Earth's rms related to plate tectonics? movement form mountains? earthquakes and volcanoes occur? erence between physical and chemical ce, and wind change Earth's surface?
Content: OpenSciEd: Plate Tectonics and Rock Cycling Lesson 1: What is causing Mt. Everest and other mountains to move, grow, or shrink? Lesson 2: How are earthquakes related to where mountains are located?		 Skills(Objectives): Construct a scie from rock strata to organize Ear Construct an ex geoscience pro varving time an 	entific explanation based on evidence for how the geologic time scale is used th's 4.6-billion-year-old history. cplanation based on evidence for how cesses have changed Earth's surface at d spatial scales

Lesson 3: How does what we find on and below Earth's surface compare in different places? Lesson 4: What is happening to Earths' surface and the material below it during an earthquake? Lesson 5: How does plate movement affect the land around mountains such as Mt. Everest? Lesson 6: How could plate movement help us explain how Mt. Everest and other locations are changing in elevation?

Lesson 7: What happens at mountains where we see volcanic activity?

Lesson 8: What is occurring at locations where two plates are moving away from each other? Lesson 9: What causes mountains to change? Lesson 10: Where were Africa and South America

in the past? 11: Where were the other plates located in the distant past?

Lesson 12: Where did mountains that aren't at plate boundaries today, like the Appalachians and Urals, come from?

Lesson 13: What causes mountains to shrink in elevation?

Lesson 14: How is there an exposed marine fossil on Mt. Everest? And, what other remaining questions from our Driving Question Board can we now answer?

The History of Planet Earth

- The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.
- Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches.

Earth Materials and Systems

- The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.
- All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and

- Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
- Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
- Cite specific textual evidence to support analysis of science and technical texts.
- Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.
- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- Draw evidence from informational texts to support analysis, reflection, and research.

physical changes in Earth's materials and living organisms.
 Plate Tectonics and Large-Scale System Interactions Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.
 The Roles of Water in Earth's Surface Processes Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. Global movements of water and its changes in form are propelled by sunlight and gravity.

Interdisciplinary Connections:

ELA/Literacy -NJSLS

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

Mathematics -NJSLS

MP.4 Model with mathematics.

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

7.RP.A.2 Recognize and represent proportional relationships between quantities.

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7.EE.B.6 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.



- Rate yourself on understanding on a fist to	- MiniLabs
five scale	- Content Practice worksheets
- Google Forms	- Math Skills
 Digital polling devices (Kahoot, Quizizz, 	- Enrichment
etc.)	- Challenge
 Exit tickets/responses 	- Lesson Quizzes
- Whiteboards	- Labs
	 Key Concept Builder activities
Learning Strategies	- Chapter Tests
- Think. Pair. Share	- Online guiz
- Direct instruction	- Online Standardized Test Practice
- Jigsaw	
- Cooperative groups	YouTube videos
 Discussion in class and discussion boards 	BrainPon videos
- Socratic Seminar	Flocabulary
	Ednuzzle
Learning Management	Newsela
Coogle Classroom share information with	Readworks org
- Google Classicolii - share information with	Sebeleatie Science World magazine
foodbook	Kealer Science Resources
Coordo Door & Coordo Clidoo - croation	
- Google Docs & Google Slides - creation	
and presentation tools	NGSS Phenomena: <u>https://www.ngssphenomena.com</u>
	IXL
	CPT and Disphilition Resources:
	LODT and Disabilities Resources.
	EGDTQ-Inclusive Lesson & Resources by Garden
	• LODIQT DOOKS
	DFI Resources:
	Learning for Justice
	GLSEN Educator Resources
	Supporting LGBTOIA Youth Resource List
	Respect Ability: Fighting Stigmas, Advancing
	Opportunities
	NIDOE Diversity Equity & Inclusion Educational
	Posourcos
	Diversity Calendar
Differentiation	L
*Please note: Teachers who have students with 504	plans that require curricular accommodations are to refer to

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving	On Grade Level	Struggling Students	Special Needs/ELL
Students	Students		
Interactive Science	Interactive Science	Interactive Science	Any student requiring further
notebooks - higher level	notebooks	notebooks - templates	accommodations and/or modifications
of Costa's questions		provided by teacher	will have them individually listed in
created	Provide challenging		their 504 Plan or IEP. These might
	tasks with support to	Break down	include, but are not limited to:
Less structure provided	allow students to	assignments into	breaking assignments into smaller
for	experience success	smaller tasks	tasks, giving directions through

assignments/assessment			several channels (auditory, visual,
s	Moderate amount of	Structured,	kinesthetic, model), and/or small
	scaffold on	predictable classroom	group instruction for reading/writing
Heterogeneous grouping	assignments		5 - 5 5
5 5 7 5	5	Graphic	ELL supports should include, but are
Research independently	Heterogeneous	organizers/Study	not limited to, the following:
or collaboratively with	grouping	guides provided	Extended time
minimal teacher guidance	· · ·	·	Provide visual aids
C C	Laboratory	Copy of class	Repeated directions
Laboratory investigations	investigations	notes/presentation	Differentiate based on proficiency
designed and carried out	designed by students	provided to student	Provide word banks
by students	with teacher		Allow for translators, dictionaries
	assistance and	Utilize student's best	
Independent Reading	carried out by	personal learning	
	students	modality (auditory,	
Marking the text on		visual, kinesthetic)	
Device	Students work in		
	groups generating	Heterogeneous	
Using a graphic organizer	notes on a specific	grouping	
for essay, bullet main	reading.		
points and ideas used in		Laboratory	
essay.	Project based	investigations	
	learning using	provided by teacher	
Student generates notes	technology	for students to carry	
on class readings.		out	
	Provide any readings		
Project based learning	on grade level based	Audio of the	
using technology	on a topic being	book/readings read	
	covered in class	to the whole class	
Provide a higher grade		Maultina tha taut and	
level readings based on	Students meet with	Marking the text and	
topic being covered in	those from other	teacher guiding the	
class	groups that read the	practice	
Students read their	discuss what was	Llaing lovel 1 and 2	
	discuss what was		
independently	what poods to be	questioning	
паеренаениу	taught to their groups	Lising a graphic	
Provide opportunity for	laught to their groups.	organizer for essav	
students to respond and	Keen a stack of blank	Organizer must be	
reflect on day's learning	index cards on hand	completely filled out	
reneer en day e learning.	to give to students at	before proceeding	
3-4 week independent	the end of class	with essay	
study projects intended to	Have students		
provide enrichment	respond on the card	Students use teacher	
	to something from the	generated notes while	
	day's lesson.	filling in missing	
		information.	
		Project based	
		learning using	
		technology - In groups	

	develop a google	
	slide presentation	
	Project based	
	learning - 2 paragraph	
	writing incorporated	
	with visual aid	
	Dravida a back that is	
	a grade or two lower	
	and pair them with a	
	nigner functioning	
	student	
	Students meet with	
	their small groups and	
	to share what they've	
	learned with each	
	other. Follow with	
	whole group	
	discussion of the most	
	important points.	
	Complete a "What I	
	Learned" Chart	

Unit Title: Weather, Climate & Water Cycling

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

<u>MS-ESS2-5.</u>

Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions

<u>MS-ESS2-6.</u>

Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates

MS-ESS3-2.

Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

Science and Engineering Practices (SEP)

- **Developing and Using Models-** Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop and use a model to describe phenomena. (MS-ESS2-6).
- **Planning and Carrying Out Investigations-** Planning and carrying out investigations in 6–8 builds on K–5 experiences and progresses to include investigations that use multiple variables and provide evidence to support explanations or solutions. Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions. (MS-ESS2-5)
- Analyzing and Interpreting Data Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis. Analyze and interpret data to determine similarities and differences in findings. (MS-ESS3-2)

Disciplinary Core Ideas (DCI)

- Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. (MS-ESS3-2).
- The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. (MS-ESS2-5)
- Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. (MS-ESS2-6)

Crosscutting Concepts (CCC)

- **Cause and Effect** Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS2-5)
- Systems and System Models Models can be used to represent systems and their interactions— such as inputs, processes and outputs—and energy, matter, and information flows within systems. (MS-ESS2-6)
- **Patterns** Graphs, charts, and images can be used to identify patterns in data. (MS-ESS3-2)
- Influence of Science, Engineering, and Technology on Society and the Natural World-The uses of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus, technology use varies from region to region and over time. (MS-ESS3-2)

Career Readiness, Life Literacies and Key Skills			
Standard	Performance Expectations	Core Ideas	
9.4.8.Cl.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.	
9.4.8.CI.4			
	Explore the role of creativity and innovation in		
	career pathways and industries.		

9.4.8.CT.1	Evaluate diverse solution	ons proposed by a	Multiple solutions often exist to solve	
	variety of individuals, organizations, and/or		a problem.	
	agencies to a local or global problem, such as			
	climate change, and us	e critical thinking skills		
	to predict which one(s) are likely to be effective			
	(e.g. MS-FTS1-2)			
	Analyze the resource of	itations in online	Detailed examples exist to illustrate	
5.4.0.00.1	materials for proper use		crediting others when incorporating	
		5.	their digital artifacts in one's own	
	Dravida appropriata aita	tion and attribution		
9.4.8.DC.2			WOIK.	
		g media products (e.g.,		
	VV.6.8).			
9.4.8.DC.7	Collaborate within a dig	ital community to	Digital communities are used by	
	create a digital artifact u	using strategies such as	individuals to share information,	
	crowdsourcing or digita	l surveys.	organize, and engage around issues	
			and topics of interest.	
9.4.8.DC.8	Explain how communiti	es use data and	Digital technology and data can be	
	technology to develop r	measures to respond to	leveraged by communities to address	
	effects of climate chang	je (e.g., smart cities).	effects of climate change.	
9.4.8.IML.7	Use information from a variety of sources,		Sources of information are evaluated	
	contexts, disciplines, and cultures for a specific		for accuracy and relevance when	
	purpose (e.g., 1.2.8.C2	a, 1.4.8.CR2a,	considering the use of information.	
	2.1.8.CHSS/IV.8.AI.1. W.5.8. 6.1.8.GeoSV.3.a.		5	
	6.1.8.CivicsDP.4.b. 7.1.	NH. IPRET.8).		
948TL2	Gather data and digitally represent information		Some digital tools are appropriate for	
0.1.0.12.2	to communicate a real-world problem (e.g.		dathering organizing analyzing and	
	MS ESS3.4.6.1.8 EconET.1		presenting information while other	
	6 1 8 Civics PR 4)	IL I. I,	types of digital tools are appropriate	
	0.1.0.0100SFR.4).		for creating text, visualizations	
	Soloot appropriate tools	to organize and	models, and communicating with	
9.4.8.TL.3	Select appropriate tools	s to organize and	models, and communicating with	
	present information dig	italiy.	others.	
Central Idea/Enduring Un	derstanding:	Essential/Guiding Que	estion:	
What factors interact and in	fluence weather and	 What are the pr 	ocesses involved in the cycling of water	
climate?		through Earth's systems?		
How doos water influence w	voathor circulato in the	What is the relationship between the complex interactions of air masses and abanges in weather		
oceans and shape Farth's	surface?	interactions of air masses and changes in weather		
occurio, and shape Earth's		What are the major factors that determine regional		
		climates?		
		 How can we predict and prepare for natural disasters? 		
Content:		Skills(Objectives):		
OpenSciEd: Weather, Climate & Water Cycling		Collect data to	provide evidence for how the motions	
Lesson 1: What causes this kind of precipitation		and complex in	teractions of air masses result in	
event to occur?		changes in wea	ther conditions.	
Lesson 2: What are the conditions like on days		 Develop and us 	e a model to describe how unequal	
when it hails?		heating and rotation of the Earth cause patterns of		
Lesson 3: How does the air	r higher up compare to	atmospheric and oceanic circulation that determine		
the air near the ground?		regional climates.		

Lesson 4: Why is the air near the ground warmer Cite specific textual evidence to support analysis of than the air higher up? science and technical texts. Lesson 5: What happens to the air near the Compare and contrast the information gained from ground when it is warmed up? experiments, simulations, video, or multimedia sources Lesson 6: How can we explain the movement of with that gained from reading a text on the same topic. air in a hail cloud? Gather relevant information from multiple print and Lesson 7: Where did all that water in the air come digital sources, using search terms effectively; assess from, and how did it get into the air? the credibility and accuracy of each source; and quote Lesson 8: What happens to water vapor in the air or paraphrase the data and conclusions of others while if we cool the air down, and why? avoiding plagiarism and following a standard format for Lesson 9: Why don't we see clouds everywhere in citation. the air, and what is a cloud made of? Integrate multimedia and visual displays into Lesson 10: Why do clouds or storms form at some presentations to clarify information, strengthen claims and evidence, and add interest. times but not others? Lesson 11: Why don't water droplets or ice Integrate quantitative or technical information crystals fall from the clouds all the time? expressed in words in a text with a version of that Lesson 12: What causes more lift in one cloud information expressed visually (e.g., in a flowchart, versus another? diagram, model, graph, or table). Lesson 13: Why do some storms produce (really big) hail and others don't? Lesson 14: What causes a large-scale precipitation event like this to occur? Lesson 15: What happens with temperature and humidity of air in large storms? Lesson 16: How do warm air masses and cold air masses interact along the boundaries between them? Lesson 17: Is there a relationship between where the air is rising and where precipitation falls? Lesson 18: How can we explain what is happening across this storm (and other large-scale storms)? Lesson 19: Are there patterns to how air masses move that can help predict where large storms will form? Lesson 20: How do oceans affect whether a place gets a lot or a little precipitation? Lesson 21: Why is there less precipitation further inland in the Pacific Northwest than further inland from the Gulf Coast? Lesson 22: How can we explain differences in climate in different parts of the world? The Roles of Water in Earth's Surface Processes The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.

 Variations in density due to variations in 	
temperature and salinity drive a global	
pattern of interconnected ocean currents.	
Weather and Climate	
 Because these patterns are so complex, 	
weather can only be predicted	
probabilistically.	
 Weather and climate are influenced by 	
interactions involving sunlight, the ocean,	
the atmosphere, ice, landforms, and living	
things. These interactions vary with	
latitude, altitude, and local and regional	
geography, all of which can affect oceanic	
and atmospheric flow patterns.	
 The ocean exerts a major influence on 	
weather and climate by absorbing energy	
from the sun, releasing it over time, and	
globally redistributing it through ocean	
currents.	
Natural Hazards	
 Mapping the history of natural hazards in a 	
region, combined with an understanding of	
related geologic forces can help forecast	
the locations and likelihoods of future	
events.	

Interdisciplinary Connections:

ELA/Literacy -NJSLS

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

Mathematics -NJSLS

MP.4 Model with mathematics.

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

7.RP.A.2 Recognize and represent proportional relationships between quantities.

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7.EE.B.6 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Stage 2: Assessment Evidence			
 Performance Task(s): Model: air movement in atmosphere (pressure & temperature, convection current) My Llfe as a Water Drop Project Weather Map Model Weather Report Essay & Video Emergency Preparedness Project CER: Edulastic Unit 3 Assessment 	Other Evidence: Do Nows Classwork Interactive Notebook Class discussions Closure activities (ex. exit tickets, kahoots, KWL charts) Personal digital responses (Kahoot, Quizizz, Quizlet, etc.) Homework Teacher observation Graphic Organizers Scientific inquiry analysis Common Formative Assessments Summative Unit Assessments		
Stage 3	: Learning Plan		
 Learning Opportunities/Strategies: Teaching Scientific Practices Guide students through appropriate laboratory techniques (safety, accuracy, frequency, data collection, etc.) Students will utilize the engineering and design process to ask questions, plan and carry out investigations, refine models, design solutions, construct explanations, and design solutions. Literacies Use reading strategies to read non-fiction text (preview, question, reflect, highlight, recite, review, utilize features available on ebooks such as highlighting, bookmarking, linking to more information, etc. 	Resources:OpenSciEd: Weather, Climate & Water CyclingLesson 1: What causes this kind of precipitation event tooccur?Lesson 2: What are the conditions like on days when it hails?Lesson 2: What are the conditions like on days when it hails?Lesson 3: How does the air higher up compare to the air nearthe ground?Lesson 4: Why is the air near the ground warmer than the airhigher up?Lesson 5: What happens to the air near the ground when it iswarmed up?Lesson 6: How can we explain the movement of air in a hailcloud?Lesson 7: Where did all that water in the air come from, andhow did it get into the air?Lesson 8: What happens to water vapor in the air if we coolthe air down, and why?Lesson 9: Why don't we see clouds everywhere in the air, andwhat is a cloud made of?		
 Digital literacy - Find and evaluate digital sources. Communicate clearly using digital platforms 	Lesson 10: Why do clouds or storms form at some times but not others? Lesson 11: Why don't water droplets or ice crystals fall from the clouds all the time?		
Questioning - Present guiding leveled questions to students. See differentiation section for specific questions.	Lesson 12: What causes more lift in one cloud versus another? Lesson 13: Why do some storms produce (really big) hail and others don't?		
 Formative assessment response modalities Teacher/student question discussion Thumbs up/thumbs down Rate yourself on understanding on a fist to five scale Google Forms 	Lesson 14: What causes a large-scale precipitation event like this to occur? Lesson 15: What happens with temperature and humidity of air in large storms? Lesson 16: How do warm air masses and cold air masses interact along the boundaries between them?		

 Digital polli etc.) Exit tickets, Whiteboard Learning Strategies Think, Pair, Direct instr Jigsaw Cooperativ Discussion Socratic Set 	ng devices (Kahoot, Quizizz, /responses ds , Share uction e groups in class and discussion boards eminar	Lesson 17: Is there a relationship between where the air is rising and where precipitation falls? Lesson 18: How can we explain what is happening across this storm (and other large-scale storms)? Lesson 19: Are there patterns to how air masses move that can help predict where large storms will form? Lesson 20: How do oceans affect whether a place gets a lot or a little precipitation? Lesson 21: Why is there less precipitation further inland in the Pacific Northwest than further inland from the Gulf Coast? Lesson 22: How can we explain differences in climate in different parts of the world?
Learning Managem - Google Cla students, p feedback - Google Do and presen	ent assroom - share information with ost assignments, collect cs & Google Slides - creation tation tools	 Get Ready to Read Launch Labs Content Vocabulary MiniLabs Content Practice worksheets Math Skills Enrichment Challenge Lesson Quizzes Labs Key Concept Builder activities Chapter Tests Online quiz Online Standardized Test Practice YouTube videos BrainPop videos Flocabulary Edpuzzle Newsela Readworks.org Scholastic Science World magazine Kesler Science Resources Edulastic NGSS Phenomena: https://www.ngssphenomena.com
		 LGBT and Disabilities Resources: <u>LGBTQ-Inclusive Lesson & Resources by Garden</u> <u>State Equality and Make it Better for Youth</u> <u>LGBTQ+ Books</u>
		 DEI Resources: Learning for Justice GLSEN Educator Resources Supporting LGBTQIA Youth Resource List Respect Ability: Fighting Stigmas, Advancing Opportunities NJDOE Diversity, Equity & Inclusion Educational Resources

Differentiation Prease note: Teachers who have students with 504 plans that require curicular accommodations are to refer to Struggling and/or Special Needs Section for differentiation Strucgling Students Special Needs/ELL High-Achieving On Grade Level Students Struggling Students Special Needs/ELL Interactive Science notebooks - higher level of Costa's questions created Interactive Science notebooks - higher level allow students to experience success Interactive Science provided by teacher Any student requiring further accommodations and/or modifications will have them individually listed in ther 504 Plan or IEP. These might include, but are not limited to: break down assignments into scafiol on assignments Heterogeneous grouping Moderate amount of scafiol on assignments Structured, predictable classroom Structured, predictable classroom Research independently or collaboratively with sy students Heterogeneous grouping Copy of class notes/presentation biferentiate to student with teacher assistance and carried out by students Copy of class notes/presentation provided to student with eacher assistance and carried out by students Students work in groups generating notes on a specific reading. Provide tasse readings. Provide to student with eacher assistance and carried out by students Laboratory investigations provided to student by students Laboratory investigations provided to student provide do steacher groups generating on grade level based on a topic being covered in class Au			Diversity Calence	<u>dar</u>
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Provide opportunity for students to respond and reflect on day's learning. 3-4 week independent study projects intended to provide enrichment	what needs to be taught to their groups. Keep a stack of blank index cards on hand to give to students at the end of class. Have students respond on the card to something from the day's lesson.	Using a graphic organizer for essay. Organizer must be completely filled out before proceeding with essay. Students use teacher generated notes while filling in missing information. Project based learning using technology - In groups develop a google slide presentation Project based learning - 2 paragraph writing incorporated with visual aid Provide a book that is a grade or two lower and pair them with a higher functioning student Students meet with their small groups and to share what they've lagrand with cash	
		Students meet with their small groups and to share what they've learned with each other. Follow with whole group discussion of the most important points.	
		Complete a "What I Learned" Chart.	

Unit Title: Earth's Resources and Human Impact

Stage 1: Desired Results

Standards & Indicators:

NJSLS for Science

<u>MS-ESS3-3.</u>

Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

MS-ESS3-4.

Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems

<u>MS-ESS3-5.</u>

Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century

Science and Engineering Practices (SEP)

- Asking Questions and Defining Problems- Asking questions and defining problems in grades 6–8 builds on grades K–5 experiences and progresses to specifying relationships between variables and clarifying arguments and models. Ask questions to identify and clarify evidence of an argument. (MS-ESS3-5)
- **Constructing Explanations and Designing Solutions** Constructing explanations and designing solutions in 6–8 builds on grades K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories. Apply scientific principles to design an object, tool, process or system. (MS-ESS3-3)
- Engaging in Argument from Evidence -Engaging in argument from evidence in 6–8 builds on grades K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem. (MS-ESS3-4)

Disciplinary Core Ideas (DCI)

- Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)
- Typically, as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise. (MS-ESS3-3), (MS-ESS3-4)
- •

Crosscutting Concepts (CCC)

- **Cause and Effect** Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. (MS-ESS3-3). Cause and effect relationships may be used to predict phenomena in natural or designed systems. (MS-ESS3-4)
- **Stability and Change-** Stability might be disturbed either by sudden events or gradual changes that accumulate over time. (MS-ESS3-5)

 Influence of Sc activity draws of negative, for the any limitations of scientific resear Thus, technolog Science Addre the concernance 	cience, Engineering, and Technology on Society an n natural resources and has both short and long-term e health of people and the natural environment. (MS-E on their use are driven by individual or societal needs, rch; and by differences in such factors as climate, natu gy use varies from region to region and over time. (MS esses Questions About the Natural and Material We	nd the Natural World-TAll human consequences, positive as well as SS3-4).The uses of technologies and desires, and values; by the findings of iral resources, and economic conditions. E-ESS3-3) orld - Scientific knowledge can describe
(MS-ESS3-4)	ces of actions but does not necessarily prescribe the d	ecisions that society takes.
	Career Readiness, Life Literacies and Key	y Skills
Standard	Performance Expectations	Core Ideas
9.4.8.Cl.1	Assess data gathered on varying perspectives on causes of climate change (e.g., cross cultural, gender-specific, generational), and determine how the data can best be used to design multiple potential solutions (e.g., RI.7.9, 6.SP.B.5, 7.1.NH.IPERS.6, 8.2.8.ETW.4).	Gathering and evaluating knowledge and information from a variety of sources, including global perspectives, fosters creativity and innovative thinking.
9.4.8.Cl.4	Explore the role of creativity and innovation in career pathways and industries.	
9.4.8.CT.1	Evaluate diverse solutions proposed by a variety of individuals, organizations, and/or agencies to a local or global problem, such as climate change, and use critical thinking skills to predict which one(s) are likely to be effective (e.g., MS-ETS1-2).	Multiple solutions often exist to solve a problem.
9.4.8.DC.1	Analyze the resource citations in online materials for proper use.	Detailed examples exist to illustrate crediting others when incorporating their digital artifacts in one's own
9.4.8.DC.2	Provide appropriate citation and attribution elements when creating media products (e.g., W.6.8).	work.
9.4.8.DC.7	Collaborate within a digital community to create a digital artifact using strategies such as crowdsourcing or digital surveys.	Digital communities are used by individuals to share information, organize, and engage around issues and topics of interest.
9.4.8.DC.8	Explain how communities use data and technology to develop measures to respond to effects of climate change (e.g., smart cities).	Digital technology and data can be leveraged by communities to address effects of climate change.
9.4.8.IML.7	Use information from a variety of sources, contexts, disciplines, and cultures for a specific purpose (e.g., 1.2.8.C2a, 1.4.8.CR2a, 2.1.8.CHSS/IV.8.AI.1, W.5.8, 6.1.8.GeoSV.3.a, 6.1.8.CivicsDP.4.b, 7.1.NH. IPRET.8).	Sources of information are evaluated for accuracy and relevance when considering the use of information.

9.4.8.TL.2	Gather data and digitall	ly represer	nt information	Some digital tools are appropriate for		
	to communicate a real-world problem (e.g.,		gathering, organizing, analyzing, and			
	MS-ESS3-4. 6.1.8.EconET.1.		presenting information, while other			
	6 1 8 CivicsPR 4)		types of digital tools are appropriate			
	•••••••••••••••••••••••••••••••••••••••			for creating text, visualizations		
	Select appropriate tools	s to organi	ze and	models, and communicating with		
9.4.8.TL.3	Select appropriate tools	s to organi. italiy	ze anu	athere		
	present information digi	italiy.		ouners.		
Central Idea/Enduring Und	lerstanding:	<u>Essentia</u>	al/Guiding Que	estion:		
Why aren't minerals and gro	undwater distributed	 How might we treat resources if we thought about the 				
evenly across the world?			Earth as a spaceship on an extended survey of the			
		5	solar system? (How would astronauts manage their		
		1	resources?)			
		• •	How do we mor	hitor the health of the environment (our		
			Me support syst	en);		
		•	con ho solvod?	in is necessary to ensure that a problem		
			What are advar	tages and disadvantages to design		
			solutions?	lages and disadvantages to design		
		•	What characteri	istics of a design will yield the best		
			solutions?	locio ol a dobigli will ylola tro boot		
Content:OpenSciEd: Earth	n's Resources &	Skills(Ot	piectives):			
Human Impact		•	Ask questions	to clarify evidence of the factors that		
Lesson 1: Why are floods a	and droughts	have caused the rise in global temperatures over the				
happening more often?	Ū	past century.				
Lesson 2: What would we r	ormally expect for	 Apply scientific principles to design a method for 				
these places and how do we	e know iťs really	1	monitoring and minimizing a human impact on the			
changing?			environment.			
Lesson 3: How would incre	ased temperatures	• (Construct an argument supported by evidence for how is an argument supported by evidence for how 			
affect evaporation?		i	increases in hui	man population and per-capita		
Lesson 4: Are rising temper	ratures affecting	0	consumption of	natural resources impact Earth's		
anything else in Earth's wate	er system?	9	systems.	the state of the second s		
Lesson 5: How are rising to	emperatures changing	Cite specific textual evidence to support analysis of science and technical texts				
Losson 6: How are rising to	moratures connected	science and technical texts.				
to two seemingly different pl	nperatures connected		(including a self	- dependent projects to answer a question		
Lesson 7: Are there any ch	anges in the air that	(including a sen-generated question), drawing on				
could be related to rising ter	nperatures?	focused questions that allow for multiple avenues of				
Lesson 8: Are changes in c	arbon dioxide and		exploration.	··· ···· ··· ··· ·····		
methane related to or causi	ng temperatures to	• (Gather relevant	information from multiple print and		
increase?			digital sources,	using search terms effectively; assess		
Lesson 9: Are the changes	in the amount of CO2	t	the credibility ar	nd accuracy of each source; and quote		
in the atmosphere part of no	ormal cycles that Earth	(or paraphrase t	he data and conclusions of others while		
goes through?		á	avoiding plagiar	ism and following a standard format for		
Lesson 10: What is happen	ing in the world to	(citation.	• • • • • • • • •		
cause the sharp rise in CO2	? 	•	Write argument	s tocused on discipline content.		
Lesson 11: Why could burn	ing tossil fuels create a	• •	Draw evidence	from informational texts to support		
problem for CO2 in the atmosphere?		6	analysis, reflect	ion, and research.		
Lesson 12: How are changes to Earth's carbon						
system impacting Earth's Wa	aler system?					
problem so challonging?	ne cimate change					
provient so challenging?		1				

Lesson 14: What things can people do to reduce	
carbon dioxide going into the atmosphere?	
Lesson 15: How can large-scale solutions work to	
reduce carbon in the atmosphere?	
Lesson 16: How are these solutions working in our	
communities?	
Lesson 17. What solutions work best for our	
school or community?	
Lesson 18: What can we explain now, and what	
guestions do we still have?	
Natural Resources	
- Humans depend on Earth's land, ocean,	
atmosphere, and biosphere for many	
different resources. Minerals, fresh water,	
and biosphere resources are limited and	
many are not renewable or replaceable	
over numan litetimes. These resources are	
distributed unevenly around the planet as	
a result of past geologic processes.	
Human Impacts on Earth Systems	
- Human activities have significantly altered	
the biosphere, sometimes damaging or	
destroying natural nabitats and causing	
the extinction of other species. But	
changes to Earth's environments can have	
different impacts (negative and positive)	
for different living things	
- Typically as human populations and	
- Typically as numari populations and	
per-capita consumption of natural	
resources increase, so do the negative	
impacts on Earth unless the activities and	
technologies involved are engineered	
otherwise.	
Global Climate Change	
- Human activities such as the release of	
aroonhouse geess from huming faceil	
tuels, are major factors in the current rise	
in Earth's mean surface temperature	
(global warming). Reducing the level of	
climate change and reducing human	
vulnerability to whatever climate changes	
do occur depend on the understanding of	
cimate science, engineering capabilities,	
and other kinds of knowledge, such as	
understanding of human behavior and on	

applying that knowledge wisely in	
decisions and activities.	
Defining and Delimiting Engineering Problems	
- The more precisely a design task's criteria	
and constraints can be defined, the more	
likely it is that the designed solution will be	
successful. Specification of constraints	
includes consideration of scientific	
principles and other relevant knowledge	
that are likely to limit possible solutions.	
······································	
Developing Possible Solutions	
- There are systematic processes for	
evaluating solutions with respect to how	
well they meet the criteria and constraints	
of a problem.	
- Sometimes parts of different solutions can	
be combined to create a solution that is	
better than any of its predecessors.	
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Optimizing the Design Solution	
- Although one design may not perform the	
best across all tests, identifying the	
characteristics of the design that	
performed the best in each test can	
provide useful information for the redesign	
process—that is, some of those	
characteristics may be incorporated into	
the new design.	
Interdisciplinary Connections:	

ELA/Literacy -NJSLS

RST.6-8.1 Cite specific textual evidence to support analysis of science and technical texts. RST.6-8.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

SL.8.5 Integrate multimedia and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest.

WHST.6-8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.

WHST.6-8.9 Draw evidence from informational texts to support analysis, reflection, and research.

Mathematics -NJSLS

MP.4 Model with mathematics.

6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

7.RP.A.2 Recognize and represent proportional relationships between quantities.

6.EE.B.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

7.EE.B.6 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

Stage 2: Assessment Evidence

Performance Task(s):	Other Evidence:
 Natural Resource CER/"Instagram" Slides 	Do Nows
Project	Classwork
 Green City Project 	Interactive Notebook
 Edulastic Unit 4 Assessment 	Class discussions
	Closure activities (ex. exit tickets, kahoots, KWL charts)
	Personal digital responses (Kahoot, Quizizz, Quizlet, etc.)
	Homework
	Teacher observation
	Graphic Organizers
	Scientific inquiry analysis
	Common Formative Assessments
	Summative Unit Assessments
Stage 3	S: Learning Plan
Learning Opportunities/Strategies:	Resources:
	OpenSciEd: Earth's Resources & Human Impact
Teaching Scientific Practices	Lesson 1: Why are floods and droughts happening more
- Guide students through appropriate	often?
laboratory techniques (safety, accuracy,	Lesson 2: What would we normally expect for these places
frequency, data collection, etc.)	and how do we know it's really changing?
- Students will utilize the engineering and	Lesson 3: How would increased temperatures affect
design process to ask questions, plan and	evaporation?
carry out investigations, refine models,	Lesson 4: Are rising temperatures aπecting anything else in
design solutions, construct explanations,	Earth's water system?
and design solutions.	in these communities?
Literacies	Lesson 6. How are rising temperatures connected to two
- Use reading strategies to read non-fiction	seemingly different phenomena?
text (preview, question, reflect, highlight,	Lesson 7: Are there any changes in the air that could be
recite, review, utilize text structure, etc.)	related to rising temperatures?
- Digital tools - utilize features available on	Lesson 8: Are changes in carbon dioxide and methane related
ebooks such as highlighting, bookmarking,	to or causing temperatures to increase?
linking to more information, etc.	Lesson 9: Are the changes in the amount of CO2 in the
- Digital literacy - Find and evaluate digital	atmosphere part of normal cycles that Earth goes through?
sources. Communicate clearly using digital	Lesson 10: What is happening in the world to cause the sharp
platforms	rise in CO2?
	Lesson 11: Why could burning fossil fuels create a problem for
Questioning - Present guiding leveled questions to	CO2 in the atmosphere?
students. See differentiation section for specific	Lesson 12: How are changes to Earth's carbon system
questions.	impacting Earth's water system?
	Lesson 13: Why is solving the climate change problem so
Formative assessment response modalities	challenging?
 Teacher/student question discussion 	

 Thumbs up/thumbs down 		Lesson 14: What things can people do to reduce carbon	
 Rate yourself on understar 	nding on a fist to	dioxide going into the atmosphere?	
five scale		Lesson 15: How can large-scale solutions work to reduce	
- Google Forms		carbon in the atmosphere?	
 Digital polling devices (Kah 	noot, Quizizz,	Lesson 16: How are these solutions working in our	
etc.)		communities?	
- Exit tickets/responses		Lesson 17: What solutions work best for our school or	
- Whiteboards		community?	
		Lesson 18: What can we explain now, and what questions do	
Learning Strategies		we still have?	
- Think Pair Share			
- Direct instruction		- Get Ready to Read	
ligsaw		- Launch Labs	
- Cooperative groups		- Content Vocabulary	
 Discussion in class and dis 	cussion boards	- Minil abs	
- Socratic Seminar		- Content Practice worksheets	
		- Math Skills	
Learning Management			
Coogle Classroom share	information with	Challenge	
- Google Classroom - share			
foodback	s, collect		
	doo orontion	- Labs Kov Concert Builder activities	
- Google Docs & Google Sild	des - creation	- Rey Concept Durider activities	
and presentation tools		- Chapter resis	
		- Online quiz	
		- Unline Standardized Test Practice	
		YouTube videos BrainPop videos Flocabulary Edpuzzle Newsela Readworks.org Scholastic Science World magazine Kesler Science Resources Edulastic NGSS Phenomena: <u>https://www.ngssphenomena.com</u> IXL LGBT and Disabilities Resources: <u>LGBTQ-Inclusive Lesson & Resources by Garden State Equality and Make it Better for Youth</u> <u>LGBTQ+ Books</u>	
		 DEI Resources: Learning for Justice GLSEN Educator Resources Supporting LGBTQIA Youth Resource List Respect Ability: Fighting Stigmas, Advancing Opportunities NJDOE Diversity, Equity & Inclusion Educational Resources Diversity Calendar 	

Differentiation

*Please note: Teachers who have students with 504 plans that require curricular accommodations are to refer to Struggling and/or Special Needs Section for differentiation

High-Achieving	On Grade Level	Struggling Students	Special Needs/ELL
Students	Students		
Interactive Science	Interactive Science	Interactive Science	Any student requiring further
notebooks - higher level	notebooks	notebooks - templates	accommodations and/or modifications
of Costa's questions		provided by teacher	will have them individually listed in
created	Provide challenging		their 504 Plan or IEP. These might
	tasks with support to	Break down	include, but are not limited to:
Less structure provided	allow students to	assignments into	breaking assignments into smaller
for	experience success	smaller tasks	tasks, giving directions through
assignments/assessment			several channels (auditory, visual,
S	Moderate amount of	Structured,	kinesthetic, model), and/or small
	scaffold on	predictable classroom	group instruction for reading/writing
Heterogeneous grouping	assignments		
		Graphic	ELL supports should include, but are
Research independently	Heterogeneous	organizers/Study	not limited to, the following::
or collaboratively with	grouping	guides provided	Extended time
minimal teacher guidance			Provide visual aids
	Laboratory	Copy of class	Repeated directions
Laboratory investigations	investigations	notes/presentation	Differentiate based on proficiency
designed and carried out	designed by students	provided to student	Provide word banks
by students	with teacher		Allow for translators, dictionaries
	assistance and	Utilize student's best	
Independent Reading	carried out by	personal learning	
	students	modality (auditory,	
Marking the text on		visual, kinesthetic)	
Device	Students work in		
	groups generating	Heterogeneous	
Using a graphic organizer	notes on a specific	grouping	
for essay, bullet main	reading.		
points and ideas used in		Laboratory	
essay.	Project based	investigations	
	learning using	provided by teacher	
Student generates notes	technology	for students to carry	
on class readings.	Descride encourse dia as	out	
Ducie et la card la carrie a	Provide any readings		
Project based learning	on grade level based		
using technology	on a topic being	to the whole close	
Drovido o bighor grado	covered in class	to the whole class	
	Studente meet with	Marking the text and	
tenia being sovered in	those from other	topohor quiding the	
	groups that road the	practico	
Class	groups that read the	practice	
Students read their	discuss what was	Lising level 1 and 2	
assigned material	most important and		
independently	what needs to be	questioning	
macpendentry	taught to their groups	Lising a graphic	
Provide opportunity for	laught to their groups.	organizer for essav	
students to respond and	Keep a stack of blank	Organizer must be	
reflect on day's learning	index cards on hand	completely filled out	
reflect on day's learning.	index cards on hand	completely filled out	

3-4 week independent study projects intended to provide enrichment	to give to students at the end of class. Have students respond on the card to something from the day's lesson.	before proceeding with essay. Students use teacher generated notes while filling in missing information. Project based learning using technology - In groups develop a google slide presentation Project based learning - 2 paragraph writing incorporated with visual aid Provide a book that is a grade or two lower and pair them with a higher functioning student Students meet with their small groups and to share what they've learned with each other. Follow with whole group discussion of the most important points. Complete a "What I Learned" Chart.	
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Pacing Guide (90 days)

Course Name	Content/Resources	Standards	
UNIT 1:			
Earth in Space 23 Days	CHAPTERS: 2: 28 days 8: 10 days Unit Online Assessment: Edulastic-2 days	MS- ESS 1-1 MS- ESS 1-2 MS- ESS 1-3 MS- PS -2-4 MS-PS 2-5 MS- LS 1-6	
UNIT 2:			
Earth's Systems 23 Days	CHAPTERS 3: 19 days (Part 1) 4: 19 days (Part 1) Unit Online Assessment: <u>Edulastic</u> -2 days	MS- ESS 1-4 MS- ESS 2.1 MS- ESS 2.2 MS- ESS 2.3 MS- ESS 2.4 MS- ESS 3-1	
UNIT 3:			
Weather & Climate/Stability & Change 22 Days	CHAPTERS 3: 19 days (Part 2) 4: 19 days (Part 2) Unit Online Assessment: Edulastic -2 days	MS- ESS 2.5 MS- ESS 2.6 MS- ESS 3.2	
UNIT 4:			
Earth & Human Activity/Impact 22 Days	CHAPTERS 5: 38 days Unit Online Assessment: <u>Edulastic</u> -2 days	MS- ESS 3.3 MS- ESS 3.4 MS- ESS 3.5	