Big Idea: Is it possible to envincer ways	s to protect humans from natural Farsh	*									 		 	 			 		
Big Idea: Is it possible to engineer ways Guiding Question: Part A: What can m Part B: In what ways can the impacts of Eolder with Additional Resources	aps tell us about the features of the wo of natural Earth processes on humans b	ld? reduced?									 		 	 			 		$ \rightarrow$
DCI (Disciplinary Core Ideas)	Science and Engineering Practices	Cross Cutting Concepts	Student Learning Objectives 1. SWB47/W417: Analyze and interpret data to recognize how patterns can be used as e ridines to import an exploration. 1. Pertubing to: the locations of mountain	Differentiated Activities	Resources/Technology	Formative Assessments	Benchmark Assessment				 						 		
ESS2.B: Plate Tectonics and Large- Scale System Interactions	Analyzing and Interpreting Data • Analyze and interpret data to make	Patterns • Patterns can be used as evidence to	1. SWBAT/ WALT: Analyze and interpret data to recornize how patterns can be used	(Consider the 3 Ex) List Activities and hyperlink them, if graslable.	List and hyperlink Resources.	List and hyperlook Formative Assessments, If available.	https://njcil.org/courses/science/4th-grade- science/subaral-				 			 					
 The locations of mountain ranges, deep ocean itenches, ocean floor structures, 	sense of phenomena using logical reasoning. (4-ESS2-2)	support an explanation. (4-ESS2-2)	as evidence to rapport an explanation.	https://njetl.org/courses/science/4th-grade- science/natural-hazards/	https://njcfl.org/courses/science/4th-grade- science/natural-bazards/attachments/natural-	https://njcil.org/courses/science/4th-grade- science/natural-bazards/stitachments/natural- barrants_chamarack_herre-arack_2t/	kazardı/attachmenti/natural-kazardı- quizzen/												
ESS2 B: Plate Techenics and Large- Scale System Interactions • The locations of mountain ranges, deep occan transfers, occan floor structures, earthquakes, and volcamese occur in patterm. Most carthquakes and patterm, deviatinguakes and short the board and that are often and occurs. Major mountain claims form inside continuents or mat their odges.			1. Pertaining to: the locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes	Lab ** More labs pertaining to this subject-link above has more labs available Earthquake Engineering. Discovery Ed. Earthquaker.	hazards-urit-plan-2/	hazanfa-choowork-homework-2	https://njctl.org/courses/science/4th-grade-												
along the boundaries between continents and oceans. Major mountain chains form inside continents or near their edges.			2. SWBAT/ WALT: Analyze and interpret	above has more labs available Earthquake Engineering		Holistically graded/graded responses to	https://njcfl.org/courses/science/4th-grade- science/natural- kazards/attachments/natural-kazards-anti- sest/				 		 				 		
inside continents or near their edges. Maps can help locate the different land and water features areas of Earth. (4- ESS2-2)			data to recognize how patterns can be used as evidence to support an explanation.	Discovery Ed: Earthquakes		open ended questions Graphic organizers with recorded evidence	1				 		 	 			 		
2552-2)			 Perintening to: exertinguaties and volcances occurring in bands that are often along the boundaries between continents and occurs. Major mountain chainst form inside construents or near their edges. 			Holistically graded/graded responses to open ended questions Graphic organizers with recorded evidence to support explinations on open ended questions Oral responses to posed questions.	https://njcil.org/courses/science/4th-grade- science/natural- kazardu/attachments/natural-kazardu- performance-basal-assesament-2/				 		 	 			 		
			along the boundaries between continents and oceans. Major mountain chains form inside continents or near their educs.		http://www.horemanscience.com/ngs-es/2b- plate-tectories-large-scale-system- micractions		hazards/attachments/natural-hazards- performance-based-assessment-2/												
			 SWBAT/ WALT: Analyze and interpret data to recognize how patterns can be used as evidence to support an explanation. 																
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			Pertaining to: Maps can help locate the different land and water features areas of Earth				ecience/natural- kazards/attachments/natural-kazards- nerformence-based-recomment-milerie-2/												
ESS3 B: Natural Hazanda • A variety of bazarde result from natural processos (e.g., cardbraides, transmiss, volcarris emptions). Humans cansot climinaris the humanls hat can takke steps to reduce their impacts. (4-ESS3-2) (Nete: This Disciplinary Core Idea can also be found in 3-WC.).	Constructing Explanations and Designing Solutions	Cause and Effect • Cause and effect relationships are matingly identified tested, and used to	different land and water features areas of Easter. 1. SWRAT WALT Identify natural processes (e.g., enripsukos, floods, tourarris, volcanic cruptions). 2. SWRAT WALT ikentify hazards of natural processes (e.g., enripsukos, floods, tourarris, volcanic cruptions). 3. SWRAT WALT: Identify areade of natural processes (e.g., enripsukos, floods, tourarris, volcanic cruptions). 3. SWRAT WALT: Identify readble research on humanism to human for processes 4. SWRAT WALT: California with processes.	https://njctl.org/courses/science/4th-grade- science/natural-hazards/attachments/natural- hazards-3/		Anecdotal notes on credible research													
volcanic eruptions). Humans cannot eliminate the hazards but can take steps	solutions to a problem based on how well they meet the criteria and	explain change. (4-ESS3-2)	 SWBAT/ WALT: Identify hazards of natural processes (e.g., earthquakes, floods, 		ality www.economicaciance.com/an-econo-	Exit slips on identification of natural processes													
to reduce their impacts. (4-ESS3-2) (Note: This Disciplinary Core Idea can also be found in 3.WC.).	constraints of the design solution. (4- ESS3-2).(3-5-ETS1-2)		tsuramis, volcanic eruptions). 3. SWBAT/ WALT: Identify credible research on hazards of natural processes	Discovery Ed: Earthquakes	nicractions http://www.boxemanscience.com/ngs-ess/b- natural-bazards									 					
			4. SWBAT/ WALT: Collaborate with peers about proposed solutions to hazards of		In the second seco														
			5. SWBAT/WALT: Collaborate with peers	Discovery Ed: Volcanoes															
			6. SWBAT/ WALT: Identify a solution by																
			performing tests under a range of likely conditions. 7. SWBAT/WALT: Identify how cause- and-effect relationships are routinely identified, tested, and used to explain change. 8. SWBAT/WALT: Determine the best drain usebution.																
			identified, tested, and used to explain change.			-					 		 	 			 		+
			8. SWBAT/WALT: Determine the best design solution																
ETS1.B: Designing Solutions to Engineering Problems	Constructing Explanations and Designing Solutions	Cause and Effect • Cause and effect relationshins pre-	Jacking Holina Kangan Markan, S. Handa, S. Kangal, J. Sanda, Y. Su, Yang Yu, Yuang Yu, Yuang Yu, Yuang Yu, Yuang Xi, Shang Yu, Yu, Yuang Yu, Yuang Yu, Yu, Yu, Yu, Yu, Yu, Yu	Weathering/Erosion Prevention Design	http://www.bozenanscience.com/ngs-ets1b- develoring-possible-solutions_		1												\neg
Testing a solution involves investigating how well it performs under	Generate and compare multiple solutions to a problem based on how	routinely identified, tested, and used to explain change. (4-ESS3-2)	2. SWBAT/ WALT: Collaborate with peers about proposed solutions to hazards of																
to 4-ESS3-2) ETS1.B: Developing Possible Solutions	constraints of the design solution. (4- ESS3-2),(3-5-ETS1-2	Influence of Engineering, Technology, and Science on Society and the Natural	3. SWBAT/WALT: Collaborate with peers to design a solution that reduces the hazards																
 Research on a problem should be carried out before beginning to design a solution. Terting a polytion involve: 		World • Engineers improve existing technologies or develop new one	of a natural process 4. SWBAT/ WALT: Identify a solution by performing tests under a range of likely-																
investigating how well it performs under a range of likely conditions. (3-5-ETS1-	Planning and Carrying Out	increase their benefits, to decrease known risks, and to meet societal	conditions. 5. SWBAT/WALT: Identify how cause-																
 At whatever stage, communicating with peers about proposed solutions is an 	Plan and conduct an investigation collaboratively to produce data to serve	 Engineers improve existing 	and-effect relationships are routinely identified, tested, and used to explain change.																
important part of the design process, and shared ideas can lead to improved	as the basis for evidence, using fair tests in which variables are controlled and the	technologies or develop new ones to increase their benefits, decrease known	 SWBAT/WALT: Utilize data to revise and determine the best design solution. 																
Tests are often designed to identify failure points or difficulties, which	number of train considered. (3-3-E1S1- 3)	ETSI-2)																	
suggest the elements of the design that need to be improved. (3-5-ETS1-3)																			
 Different solutions need to be tested in order to determine which of them best 	Plan and conduct an investigation		 SWBATT WALT: Identify a solution through collaboration by performing tests under a range of likely conditions. 2. SWBATTWALT: Identify through collaboration how crass-and-effect the relationships are routinely identified, tested, and used to explain change. 3. SWBATTWALT: Unline data and determine the first detain solution. 		optimizing-the-design-solutions														
solves the problem, given the criteria and the constraints. (3-5-ETS1-3)	collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the		SWBAT/WALT: Identify through collaboration how cause-and-effect relationshins are routinely identified, tested.																
	number of trials considered. (3-5-ETS1- 3)		and used to explain change. 3. SWBAT/WALT: Utilize data and																
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