6th Grade Science
Program of Studies Description

Sixth grade students will dive into the revealing world of Earth Science. Students will use the scientific process, the rock cycle, plate tectonics, weather, and natural resources to discover the similarities and patterns that exist in the world around us and the impact humans have on these systems. Emphasis will be on hands-on inquiry, critical thinking, and problem-solving skills.

The Meaningful Watershed Educational Experience (MWEE) is a program that empowers students to investigate the effects of human development on aquatic ecosystems, with a special focus on the vital functions of wetlands. The program offers an array of educational opportunities for both students and teachers. The students will embark on labs that include water quality and testing. Labs will focus on improving water quality and raising awareness about the challenges facing wetland habitats in their local communities.

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Syllabus

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REQUIRED TOPICS OF STUDY	SUGGESTED INSTRUCTIONAL TIME	STANDARDS/ ELIGIBLE CONTENT	COMMON ASSESSMENT
Earth's Materials and Systems	**6-9 weeks**	**3.3.6-8.E, 3.3.6-8.F**	**Chapter 2, 3, 4 Quiz/Test Project/ Mosa Mack**
Plate Tectonics and Large Scale System Interactions	**2-3 weeks**	**3.3.6-8.G**	**Chapter 7 Quiz/Test Mosa Mack**
The Roles of Water in Earth's Surface Processes	**4-6 weeks**	**3.3.6-8.H, 3.3.6-8.I**	**Chapter 12 & 13 Quiz/Test Project**
Weather and Climate	**4-6 weeks**	**3.3.6-8.J, 3.3.6-8.O**	**Chapter 12 & 13 Quiz/Test Project/ Mosa Mack**
Natural Resources	**4-6 weeks**	**3.3.6-8.K**	**Chapter 3 & 18 Quiz/Test Project/ Mosa Mack**
Natural Hazards	**2-3 weeks**	**3.3.6-8.L**	**Chapter 9 Quiz/Test Project/ Mosa Mack**
Human Impact on the Earth Systems	**2-3 weeks**	**3.3.6-8.M, 3.3.6-8.N**	**Chapter 18 Quiz/Test Project/ Mosa Mack**
Watersheds and Wetlands	**Year Long**	**3.4.6-8.C**	**MWEE/Labs**
Environmental Experiences	**Year Long**	**3.4.6-8.E**	**MWEE/Labs**
Environmental Stewardship	**Year Long**	**3.4.6-8.H**	**MWEE/Labs**
Influence of Society on Technological Development	**2-3 weeks**	**3.5.6-8.D**	**Chapter 18 Quiz/Test Project**

Resources: McGraw-Hill Earth and Space Science Textbook, Mosa Mack, MWEE Labs, Scientific Method Labs, Common Assessments

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Unit 1	**HISTORY OF THE EARTH**				
Big Idea	We can infer Earth's planetary history by features we observe today. Changes we observe on Earth are the result of energy flowing and matter cycling between interconnected systems (the geosphere, hydrosphere, atmosphere, and biosphere). Plate tectonics explains the past and current movements and features of the rocks at Earth's surface.				
Unit Essential Questions:	How do people reconstruct and date events in Earth's planetary history? How and why is Earth constantly changing? Why do the continents move, and what causes earthquakes and volcanoes?				
Date/Weeks	**PA Standards/ Eligible Content**	**Vocabulary**	**Instructional Materials**	**Common Assessments**	**Link to Profile of a Zephyr**
	3.3.6-8.E Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.	weathering erosion deposition sediment geoscience processes (eg: earthquakes, volcanoes, meteor impacts, etc.)	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Secondary Resource IXL	
	3.3.6-8.G Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions.	fossils ridge trench Pangea seafloor spreading	McGraw-Hill Earth and Space Science Textbook, Mosa Mack, Scientific Method Labs	Chapter Quiz/Test, Mosa Mack, IXL, Lab	

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	3.3.6-8.D 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.	weathering erosion geosphere igneous rock metamorphic rock sedimentary rock rock cycle	McGraw-Hill Earth and Space Science Textbook	Chapter Quiz/Test, IXL	

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Unit 2	**EARTH SYSTEMS**				
Big Idea	Changes we observe on Earth are the result of energy flowing and matter cycling between interconnected systems (the geosphere, hydrosphere, atmosphere, and biosphere). All materials, energy, and fuels that humans use are derived from natural sources, some of which are renewable over time and others are not.				
Unit Essential Questions:	How do Earth's major systems interact? How do Earth's surface processes and human activities affect each other? How do humans depend on Earth's resources?				
Dates/weeks	**PA Standards/ Eligible Content**	**Vocabulary**	**Instructional Materials**	**Common Assessments**	**Link to Profile of a Zephyr**
	3.3.6-8.F Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.	chemical/ physical changes melting crystallization weathering deformation sedimentation	McGraw-Hill Earth and Space Science Textbook	Chapter Quiz/Test, IXL	
	3.3.6-8.K 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.	nonrenewable resources renewable resources earth's resources (e.g. minerals, energy, groundwater, etc.) geologic processes (e.g., volcanic activity, sedimentary processes)	McGraw-Hill Earth and Space Science Textbook, Mosa Mack, Scientific Method Labs	Chapter Quiz/Test, Mosa Mack, IXL, Lab	

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Unit 3	**WEATHER AND CLIMATE**				
Big Idea	Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. Water's presence and properties impact Earth's ecosystems and surface features.				
Unit Essential Questions:	What regulates weather and climate? How do the properties and movements of water shape Earth's surface and affect its systems?				
Dates/weeks	**PA Standards/ Eligible Content**	**Vocabulary**	**Instructional Materials**	**Common Assessments**	**Link to Profile of a Zephyr**
	3.3.6-8.J Collect data to provide evidence for how the motion and complex interactions of air masses result in changes in weather conditions.	high/low pressure temperature pressure humidity precipitation wind air mass	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Mosa Mack, IXL	
	3.3.6-8.I 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-ESS2-6	coriolis effect thermal energy radiation salinity density climate	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Mosa Mack, IXL	

	3.3.6-8.O Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century. MS-ESS3-5	human activities natural processes greenhouse gas carbon dioxide	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Mosa Mack, IXL	

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Unit 4	**HUMAN IMPACTS**				
Big Idea	Natural processes can cause sudden or gradual changes to Earth's systems, some of which may adversely affect humans. Human activities in agriculture, industry, and everyday life have an impact on the land, rivers, ocean, and air.				
Unit Essential Questions:	How do natural hazards affect individuals and societies? How do humans change the planet?				
Dates/weeks	**PA Standards/ Eligible Content**	**Vocabulary**	**Instructional Materials**	**Common Assessments**	**Link to Profile of a Zephyr**
	3.3.6-8.L Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.	natural hazards geologic processes (e.g., volcanic activity, sedimentary processes)	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Mosa Mack, IXL	
	3.3.6-8.M Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.	pollution	McGraw-Hill Earth and Space Science Textbook, Mosa Mack	Chapter Quiz/Test, Mosa Mack, IXL	
	3.3.6-8.N	population	McGraw-Hill Earth and Space	Chapter Quiz/Test, Mosa Mack, IXL	

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	Construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's Systems.	natural resources	Science Textbook, Mosa Mack		

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Unit 5	ENVIRONMENTAL LITERACY AND SUSTAINABILITY				
Big Idea	Earth's systems, including watersheds and wetlands, function as interconnected systems that influence environmental quality and sustainability. By collecting and analyzing environmental data, individuals can design and evaluate solutions that promote responsible stewardship and long-term sustainability of natural resources.				
Unit Essential Questions:	How do watersheds and wetlands function as systems, and why are they important to environmental health? How can data be collected and used to understand and evaluate local environmental conditions? What factors impact the quality of a local environment? How do human activities affect ecosystems and natural resources?				
Dates/weeks	**PA Standards/ Eligible Content**	**Vocabulary**	**Instructional Materials**	**Common Assessments**	**Link to Profile of a Zephyr**
	3.4.6-8.C Develop a model to describe how watersheds and wetlands function as systems, including the roles and functions they serve.	Watershed wetlands	MWEE Labs	MWEE Labs	
	3.4.6-8.E Collect, analyze, and interpret environmental data to describe a local environment.		MWEE Labs	MWEE Labs	

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	3.4.6-8.H Design a solution to an environmental issue in which individuals and societies can engage as stewards of the environment.				