



Marietta City Schools

District Unit Planner

Everything on the unit planner must be included on the unit curriculum approval statement.

Science Grade 6 Advanced Studies

Unit title	<i>Water in Earth's Processes</i>	MYP year	1	Unit duration (hrs)	25 Hours
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GSE Standards

Standards

S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth's processes.

- Ask questions* to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.
- Plan and carry out an investigation* to illustrate the role of the sun's energy in atmospheric conditions that lead to the cycling of water.
- Ask questions* to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans.
- Analyze and interpret data* to create graphic representations of the causes and effects of waves, currents, and tides in Earth's systems.

S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.

- Ask questions* to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.
- Design and evaluate solutions* for sustaining the quality and supply of natural resources such as water, soil, and air.
- Construct an argument* evaluating contributions to the rise in global temperatures over the past century. (Clarification statement: Tables, graphs, and maps of global and regional temperatures and atmospheric levels of greenhouse gases, such as carbon dioxide and methane, should be used as sources of evidence.)

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)

In fourth grade, students investigate the following:

S4E3. Obtain, evaluate, and communicate information to demonstrate the water cycle.

- Plan and carry out investigations to observe the flow of energy in water as it changes states from solid (ice) to liquid (water) to gas (water vapor) and changes from gas to liquid to solid.
- Develop models to illustrate multiple pathways water may take during the water cycle (evaporation, condensation, and precipitation)

Concepts/Skills to be Mastered by Students

- Water Cycle
- Thermal Energy Transfer
- Sunlight
- Temperature
- Salinity & Density

Human Energy Needs

Key Vocabulary: (KNOWLEDGE & SKILLS)

Evaporation
Transpiration
Condensation
Precipitation
Infiltration
Run-off
Radiation
Collection
Reservoir
Aquifer
Water table
Acid rain
Humidity
Salinity
Density
Desalination
Renewable resource
Non-renewable resource
Current

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

Earth is the only planet in our solar system that is able to support life.

Unit Phenomena (LEARNING PROCESS)

Show the water cycle [video on the Engage Page of DE Science Techbook](#).

How do humans impact the water cycle?

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)

Students think all freshwater is clean, drinkable water.
Students do not understand that lakes, rivers, and streams are freshwater.
Students need to understand why the oceans are salty.

Key concept	Related concept(s)	Global context
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<p>Systems and Systems Models Systems are sets of interacting or interdependent components that provide structure and order in human, natural, and built environments. They can be static or dynamic, simple or complex.</p>	<p>Balance (MYP) Energy (MYP/CCC) Transformation (MYP)</p>	<p>Globalization and sustainability Globalization and sustainability explores the interconnectedness of human-made systems and communities; the relationship between local and global processes; how local experiences mediate the global; the opportunities and tensions provided by world- interconnectedness; the impact of decision-making on humankind and the environment.</p>
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Statement of Inquiry

Sustainable management of the Earth’s water resources means that human needs must be balanced with those of the natural world.

Inquiry questions

Factual—

Where is fresh water and salt water found?
 How much of the Earth is covered in water?
 How is water distributed on Earth?
 What energy and forces are involved in each of the processes of the water cycle?

Conceptual—

How does heat energy affect water? How does water move on Earth?
 How can graphs and maps help me ask questions?
 How does water flow through systems on Earth?
 Why is the water cycle a self-renewing process?

Debatable-

Should we do anything about plastic islands?
 How do humans' actions impact the environment?

MYP Objectives	Assessment Tasks	
<p><i>What specific MYP objectives will be addressed during this unit?</i></p>	<p><i>Relationship between summative assessment task(s) and statement of inquiry:</i></p>	<p><i>List of common formative and summative assessments.</i></p>

<p>MYP A MYP D</p>	<p>MYP A: Knowing and Understanding: Apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations through the LabAids 14 Building on the Mississippi.</p> <p>MYP D: Students will reflect on the impacts of science by identifying how science is applied and used to address a specific problem or issue through the Where to Build LabAid Activity 14 and the Building on the Mississippi Lab Aid activity.</p>	<p>Formative Assessment(s): MUA Water Cycle</p> <p>Summative Assessment(s): Water in Earth Processes Paper I and Paper II</p>
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Approaches to Learning (ATL)

Category: Thinking, Research, Collaboration
Skill Indicator: Use models and simulations to explore complex systems and issues. Collect and analyze data to identify solutions and make informed decisions. Working effectively with others.

Learning Experiences
Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
<p>S6E3. a. Ask questions to determine where water is located on Earth’s surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.</p>	<p>Lab Aid Activity 1: Where Should We Build? Students will examine photographs of undeveloped and developed hillsides, wetlands, and cliff-top areas. Students will then use their observations about changes that have happened to these areas to make a preliminary decision as to which site would be best for building a school and field. Finally, students will identify which evidence would help them make a more informed decision, and they consider this decision over the course of the unit.</p>	<ul style="list-style-type: none"> ● Lab-Aids Experiences (individual and collaborative activities) ● Capstone Connections ● Choice of product creation
<p>S6E3. b. Plan and carry out an investigation to illustrate the role of the sun’s energy in atmospheric conditions that lead to the cycling of water.</p>	<p>Lab Aid Activity 8: Traveling with the Water Cycle: In this activity, students will model what happens to water as it travels and changes as it moves through the planet. Students will also model what happens when the water picks up harmful contaminants along its journey.</p>	
<p>S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources</p>	<p>LabAids 3: Water Quality: The students will construct graphs of three common water-quality indicators over time and compare them to a graph of Boomtown’s population over the same time period. The graphs indicate a trend of declining water</p>	

<p>and how they impact the Earth.</p> <p>b. Design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.</p>	<p>quality over the past 100 years. Students consider whether the increase in population is a correlation or a casual relationship between the population and the decline in water quality.</p>	
Content Resources		
<p>LabAids, Brain pop content videos, Edpuzzle content videos, Discovery Education</p>		
Capstone Connections		
<p>Students will continue to work independently on their Capstone project.</p>		