



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 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.

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

- Design and evaluate solutions for sustaining the quality and supply of natural resources such as water, soil, and air.

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

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](#).

Ask: *What energy and forces are involved in each of the processes of the water cycle?* Why is the water cycle a self-renewing process? 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 lakes, rivers and streams are freshwater.
 Students do not understand why the oceans are salty.

Key concept	Related concept(s)	Global context
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<p>Systems Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems 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?

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?

Debatable-

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

MYP Objectives	Assessment Tasks
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<p><i>What specific MYP objectives will be addressed during this unit?</i></p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p>	<p><i>List of common formative and summative assessments.</i></p>
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<p>Criterion A: Knowing and Understanding</p> <p>ii. Apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations</p> <p>iii. Interpret information to make scientifically supported judgments</p> <p>Criterion D: Reflecting on the Impacts of Science</p> <p>i. Summarize the ways in which science is applied and used to address a specific problem or issue</p> <p>ii. Describe and summarize the various implications of using science and its application in a specific problem or issue</p> <p>iii. apply scientific language effectively</p> <p>iv. discuss the validity of the method</p> <p>v. describe improvements or extensions to the method</p>	<p>MYP A- Paper 1 will allow students to showcase their understanding of the unit content by answering a variety of Depth of Knowledge questions</p> <p>MYP D: Students will reflect on the impacts of science by identifying the ways in which science is applied and used to address a specific problem or issue through the Where to Build Lab Aid Activity and the Building on the Mississippi Lab Aid activity.</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 Building on the Mississippi.</p>	<p><u>Formative Assessment(s):</u></p> <p>Water in Earth Processes Common Formative Assessment</p> <p><u>Summative Assessment(s):</u></p> <p>Water in Earth Processes</p> <p>Paper I and Paper II</p> <p>Lab Aid 14: Building on the Mississippi (graded with MYP Rubric Criterion A and D)</p>
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Approaches to learning (ATL)

Category: Thinking

Cluster: Critical-Thinking

Skill Indicator: Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
<p>S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.</p> <p>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 with product creation
<p>S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.</p> <p>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>S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.</p> <p>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>LabAids 11: Boomtown’s Topography: The students will compare the street maps and topographic maps of Boomtown in the present with topographic maps of Boomtown from 25 to 100 years ago. They identify changes that have taken place in the landforms at the building locations. They consider how evidence from the topographic maps might suggest potential problems for the three possible building locations.</p>	
<p>S6E6. Obtain, evaluate, and communicate information about the uses and</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>conservation of various natural resources 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>Lab Aids Teacher content created powerpoints Brain pop content videos Edpuzzle content videos Gizmo content simulations Discovery Education</p>		
Capstone Connections		
<p>Mercedes Benz Field trip: By experiencing the MBS field trip, students will learn why the stadium was constructed based on the geographical landform. This connects to their capstone by having students understand what the engineers went through in order to construct the building.</p>		
<p>Mercedes Benz Field Trip and Experiencing the Mercedes Benz Fieldtrip, students will learn how the stadium reuses and recycles water to create their own water cycle. This experience connects students to the hands-on activity Lab Aid 3: Water Quality. This connects to the capstone by having students reflect on conservation.</p>		