Marietta City Schools

District Unit Planner

Science Grade 6

Unit title	*Water in Earth's Processes & Human Energy Needs*	**MYP year**	*1*	**Unit duration (hrs)**	*25 Hours*

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.

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.

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.

c. Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans.

d. 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.

a. 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.

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

c. 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.

a. 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.

b. 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)

Engage with the Discovery Education Water Cycle Video
Ask: 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
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.	Environment(MYP) Transformation (MYP) Balance (MYP) Energy (MYP/CCC)	**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.

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 water cycle processes?

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 humans' actions impact the environment?

MYP Objectives	Assessment Tasks	
*What specific MYP **objectives** will be addressed during this*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative*

unit?		*assessments.*
Sciences **Design**	MYP C- Where are the Rubber Duckies? MYP D- Reflections of Water Scarcity or Plastic Island (Balance)	**Formative Assessment(s):** Common Formative Assessment **Summative Assessment(s):** Common Summative Assessment
Approaches to Learning (ATL)		
Category: Self-Management and Social Collaboration **Skill Indicator:** Set goals that are challenging and realistic; Give and receive meaningful feedback		

Learning Experiences Add additional rows below as needed.		
Objective or Content	**Learning Experiences**	**Personalized Learning and Differentiation**
S6E3. a. *Ask questions* to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater aquifers, ice) and communicate the relative proportion of water at each location.	Students will use data from the water distribution activity to create questions about where water is located on Earth. MYP C- Where are the Rubber Duckies?	Scaffold notes for special education and ESOL
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 (evaporation, condensation, precipitation, transpiration, infiltration, groundwater, and runoff)	Miniature Model of Water Cycle and the Journey Story- Students explore and explain how water moves in the bag and extend their thinking by connecting that to water moving from one location on Earth to another. https://www.sciencebuddies.org/stem-activities/water-cycle-in-bag?from=Blog	Scaffold notes for special education and ESOL
S6E6. b. *Design and evaluate solutions* for sustaining the quality and supply of natural resources such as water, soil, and air.	Water Filtration Lab- How clean is water? https://littlebinsforlittlehands.com/water-filter-activity/ or https://kids.nationalgeographic.com/books/article/water-wonders	Scaffold notes for special education and ESOL
Content Resources		
Discovery Education Science Techbook - Water on Earth, Edpuzzle.		