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	*Human Energy Needs & Capstone*	**MYP year**	1	**Unit duration (hrs)**	25 Hours (Spiraled Throughout Year)

Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): ***What will students learn?***

GSE Standards

Standards

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 gasses such as carbon dioxide and methane, should be used as sources of evidence.)

Gifted Standards

Stand 1: Advanced Research Skills: Students will develop and utilize advanced research skills among various topics.
Strand 2: Creative Thinking Skills: Students will develop and utilize creative thinking through a variety of products and problem solving.
Strand 3: Higher Order Thinking and Problem- Solving Skills: Students will develop and utilize critical thinking, higher order thinking, logical thinking and problem solving skills in various situations.
Strand 4: Advanced Communication and Collaboration Skills: Students will develop advanced communication and collaboration skills in working toward a common goal with shared accountability for the final outcome.
Strand 5: Emotional Development of Self: Students will develop understanding of self and how one's own unique abilities influence interactions with others.
Strand 6: Self-directed Learner: Students will become self-directed, independent-learners.

Concepts/Skills to be Mastered by Students

- Renewable and nonrenewable energy
- Global climate and change
- Capstone Project

Key Vocabulary: (KNOWLEDGE & SKILLS)

Conservation
Natural Resource
Nonrenewable resource
Renewable Resource
Inexhaustible Resource

Impact
Fossil Fuel
Solar energy
Wind energy
Geothermal energy
Biomass
Tidal energy
Greenhouse gasses
Methane gas
Ozone
Climate Change
Soil
Windbreaks
Conservation Tillage
Terraces
Contour Plowing
Crop rotation

Key Vocabulary II: (KNOWLEDGE & SKILLS)
Sustainability-Centered Decisions, Sustainable Development Goals through the United Nations Goals, Service as Action

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)
In third grade, students investigate the following:

S3L2. Obtain, evaluate, and communicate information about the effects of pollution (air, land, and water) and humans on the environment.
a. Ask questions to collect information and create records of sources and effects of pollution on the plants and animals.
b. Explore, research, and communicate solutions, such as conservation of resources and recycling of materials, to protect plants and animals.

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)
Students think you can get any type of energy source here in Georgia.
Students do not understand how valuable soil is to farmers or to their day-to-day lives.

Year-Long Anchoring Phenomena: (LEARNING PROCESS)
Earth is the only planet in our solar system that can support life.

Unit Phenomena (LEARNING PROCESS)
How can I use the United Nations Sustainable Development Goals or demonstrate Service in Action to improve myself, school, and/or community?

Key concept	Related concept(s)	Global context

Relationships (MYP) Relationships are the connections and associations between properties, objects, people, and ideas—including the human community's connections with the world in which we live. Any change in a relationship has consequences.	Environment (MYP)	**Scientific and Technical Innovation** Students will explore the natural world and its laws; the interaction between people and the natural world; how humans use their understanding of scientific principles; the impact of scientific and technological advances on communities and environments; the impact of environments on human activity; how humans adapt environments to their needs.

Statement of inquiry

Scientific and technological advancements have allowed the support of Sustainable Development Goals.

Inquiry questions

Factual— What is a sustainability-centered decision? What are the Sustainable Development Goals of the United Nations?

Conceptual— How can our students creatively support environmental/global sustainability efforts or IB Service in Action near their home, school, or community?

Debatable- What can our current students begin that future students can sustain?

MYP Objectives	**Assessment Tasks**	
*What specific MYP **objectives** will be addressed during this unit?*	***Relationship** between summative assessment task(s) and statement of inquiry:*	*List of common formative and summative assessments.*
Criterion A: Knowing and Understanding ii. Apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations iii. Interpret information to make scientifically supported judgments	MYP D - Presentation of the case for/or against creating a category for Climate Refugee. Students will plan and implement a capstone project based on the Sustainable Development Goals. Students will use the Honors Science 6- Capstone Resources to stay on track while completing their project. Students will reflect on and evaluate their project using the MYP Design cycle and reflection task.	**Formative Assessment(s):** ● Capstone Brainstorming ● Graphic Organizer: Becoming Agents for Change through The Sustainable Development Goals ● Action Plan Proposal Parts A-D ● Capstone Reflection **Summative Assessment(s):** Capstone presentation

Criterion C: Processing and Evaluating i. present collected and transformed data Criterion D: Reflecting on the Impacts of Science		

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
Students develop a rationale for their capstone project. Students understand if the topic and rationale are viable.	Part 1: Introduction to Action Plan- Capstone Brainstorming Students will create the justification for their final capstone project idea.	Topic Choice Presentation Mode Individual or Partner work Small group instruction as needed
Students investigate and research capstone topics to develop an action plan.	Part 2: Graphic Organizer: Becoming Agents for Change through The Sustainable Development Goals	
Students can effectively explain, write, defend, and assess the effectiveness of capstone problems and solutions.	Part 3: Action Plan Proposal Part A-D Students will investigate the Science Georgia Standards of Excellence and IB Service in Action to reflect on what they already know about their proposal. They will also develop project goals, expected outcomes, and criteria.	
Students can present, reflect, and express their experience with the capstone.	Part 4: Capstone Presentation- Students create a presentation explaining their action and present it in front of the class. Part 5: Capstone Reflection- Students will reflect on their capstone experience.	

Content Resources
- Capstone templates - Research topics - Capstone Timeline - 17 Sustainable Development Goals
Capstone Connections Discovery Education Science Techbook - Human Energy, Conservation and Sustainability Unit Resources Media Center Visits - Exploring Effective Scientific Research