MYP/3D Science Unit Planner

Marietta City Schools

Grade & Course: Environmental Science	**Topic:** Human Population and Environmental Impact	**Duration:** 5 weeks
Teachers: Env. Science PLC Teachers		

Georgia Standards and Content:

SEV4. Obtain, evaluate, and communicate information to analyze human impact on natural resources.
c. Construct an argument to evaluate how human population growth affects food demand and food supply (GMOs, monocultures, desertification, Green Revolution).

SEV5. Obtain, evaluate, and communicate information about the effects of human population growth on global ecosystems.
a. Construct explanations about the relationship between the quality of life and human impact on the environment in terms of population growth, education, and gross national product.
b. Analyze and interpret data on global patterns of population growth (fertility and mortality rates) and demographic transitions in developing and developed countries.
c. Construct an argument from evidence regarding the ecological effects of human innovations (Agricultural, Industrial, Medical, and Technological Revolutions) on global ecosystems.

Narrative / Background Information

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

Understanding of ecosystems, biodiversity, energy resources, and climate factors. Additionally, students were introduced to human impact ecosystems in 7th grade (S7L4c).

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

Human activities have negatively impacted ecosystems, global climate, energy resources, and population.

Unit Phenomena (LEARNING PROCESS)

Innovations in agriculture have met the demands of a growing population, but have also led to significant ecological consequences both locally and globally.

MYP Inquiry Statement:

The different stages of human population growth during and before the Industrial Revolution led to an increase in demand for resources, particularly food. These innovations led to the increased food production, they have also had significant ecological consequences, both locally and globally.

MYP Global Context:

- *Personal and cultural expression*
- *Scientific and technical innovation*
- *Fairness and development*

Approaches to Learning Skills:

- Develop and Using Models
- Obtaining, evaluating, and communicating information
- Analyzing and interpreting data
- Make guesses, ask what if questions and generate testable hypotheses

Science and Engineering Practices

- Develop and Using Models

Disciplinary Core Ideas: (KNOWLEDGE & SKILLS)

- Quality of Life and Historical Human Impact on Ecosystems
- Global Patterns of Population Growth
- Ecological Effects of Mankind's Innovations
- Human Population Growth and Food Demand

Crosscutting Concepts: (KNOWLEDGE & SKILLS)

- Change
- Cause and Effect
- Patterns
- Systems

MYP Key and Related Concepts:

- *Change*
- *Communication*
- *Communities*

● Obtaining, evaluating, and communicating information ● Analyzing and interpreting data ● Make guesses, ask what if questions and generate testable hypotheses		● *Culture* ● *Development* ● *Global Interactions* ● *Relationships* ● *Systems* ● *Development* ● *Sustainability* ● *Cause and Effect* ● *Energy*

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

Students may not know what sustainability really means.
Students may only link sustainability to "Going Green".
Students may link sustainability to lowering our standard of living.
Students may not have conducted extensive research.
Students may assume that their choices and school based activism, not government intervention offer the most efficient routes to sustainability.
Students may not make connections across the curriculum.
Students may not understand that sustainability should be an ongoing effort as our world changes.

Key Vocabulary: (KNOWLEDGE & SKILLS)
Demographics
Age Structure
Survivorship
Fertility Rate
Child Mortality Rate
Developed Country
Developing Country
Migration
Immigration
Emigration
Life Expectancy
Demographic Transition
Industrial Revolution
Agricultural Revolution
Medical Revolution
Technological Revolution
Urbanization
Carbon footprint

Inquiry Questions:

Factual

1. Is there a "Green tax" incentive to reduce pollution in all states?
2. Which revolution led to better crop yields, greater diversity of wheat and vegetables and the ability to support more livestock?
3. What are the contributing factors of underdeveloped countries?

Conceptual

1. What innovations/research have you come across in the field of resource recovery and education?
2. What role do you see for the Scientific Community in improving Global/Local sustainability?

Debatable

1. What can lead to a more sustainable world culture? What about Local Culture?
2. How much responsibility should lie with individuals to adopt climate friendly lifestyles in developing countries?
3. List four main things that must be accomplished within a country for it to be considered "developed".

MYP Objectives	Summative assessment	
MYP A- Knowing and Understanding **MYP D- Reflecting on the impacts of science**	Unit 5 Common Learning experience- MYP D MYP Criterion A CFA CSA	Relationship between summative assessment task(s) and statement of inquiry: Summative assessments and Group presentations will allow students to demonstrate their understanding of unit material. Students will also reflect on the implications of science.

Unit Objectives:			
Learning Activities and Experiences	**Inquiry & Obtain: (LEARNING PROCESS)**	**Evaluate: (LEARNING PROCESS)**	**Communicate: (LEARNING PROCESS)**
Weeks 1 and 2: **SEV5c/b**	Research and discuss human innovations and their impact on the environment Research and discuss what sustainability is and why it is important Carbon footprint discussion	Students work in groups to research and create posters about an innovation and its impact on the environment Students work in small groups or pairs to design a sustainability plan Students take an online assessment to determine their carbon footprint and its impact on the environment	Students present their posters and pose questions for further potential research Students provide feedback on each other's sustainability plans. Students can be given the opportunity to improve based on feedback Students discuss ways to lessen their personal carbon footprint
Weeks 3 and 4: **SEV5a/ SEV4c**	Population Pyramids TEDEd Video https://www.youtube.com/watch?v=RLmKfXwWQtE Class discussion -- what is "the good life" in US culture? "Day Zero" Capetown case study reading/video	Population Pyramid video quiz Create and analyze a Population Pyramid - graphing activity Human impact vs quality of life CER and reading	Analyze and interpret populations of different countries around the world through a discussion. Students share their CER responses and then have a whole group discussion
Week 5: Review and CSA	Review Unit Material with Students	Unit Study Guide Unit CSA	Assessment Results & Recovery Opportunities

Resources (hyperlink to model lessons and/or resources):
Discovery Education Science Techbook

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit

Curriculum Unit Approval Statement
Every team member is expected to read and review the unit planner and contents contained in the unit planner.

This unit meets the rigorous review and approval process of Marietta City Schools. All components of the unit have been reviewed and approved including learning experiences, materials, resources, texts, and assessments. This unit's components:

- Are aligned to Georgia Standards of Excellence and MYP/DP subject area guide (if applicable)
- Are aligned to the pacing of the approved Subject Group Overview
- Provide resources that are appropriate for students' grade level, subject/course level, etc.
- Provide learning experiences that prepare students for course assessments

PLCs review each learning experience using three criteria and collaborate to provide explicit and specific information.

Criteria I: Standards Alignment: *Learning experiences should provide alignment to the standards and the MYP subject area guide (if applicable).*	**Criteria II: Materials, Resources, and Text Complexity and Controversial Topics and Issues:** *Materials, resources, and texts are grade level and content appropriate.*	**Criteria III: Assessment Alignment:** *Since assessment drives instruction, learning experiences must align to and prepare students for regular common formative and summative assessments used to determine whether students are mastering standards-based content and ATL skills.*

Common Formative and Summative Assessments		
Assessment Title	**Criteria I:** Does the PLC have any concerns or issues regarding the alignment of learning experiences, materials, and resources to: 1. **State Standards** 2. **MYP/DP (if applicable) components** 3. **Aligned to learning experiences** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution.	**Criteria II:** Does the PLC have any concerns or issues regarding 1. **Complexity of resources including text and vocabulary** 2. **Controversial topics and issues in learning experiences, materials or resources** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution. Include the **specific quote(s)** and reference **page numbers** or **location** (ex: time in video).
Formative Assessment(s):		
Summative(s) Assessment:		
Plan to address issues or concerns noted:		

Learning Experiences Add additional rows below as needed.			
Learning Experience Title	**Criteria I:** Does the PLC have any concerns or issues regarding the alignment of learning experiences, materials, and resources to: 1. **State Standards** 2. **MYP/DP (if applicable) components** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution.	**Criteria II:** Does the PLC have any concerns or issues regarding 1. **Complexity of resources including text and vocabulary** 2. **Controversial topics and issues in learning experiences, materials or resources** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution. Include the **specific quote(s)** and reference **page numbers** or **location** (ex: time in video).	**Criteria III:** Does the PLC have any concerns or issues regarding 1. **Common Assessment alignment to instruction and/or standards** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution.
LE 1:			
LE 2:			
LE 3:			
Plan to address issues or concerns noted:			

Resources listed on unit planner Add additional rows below as needed.			
Resources	**Criteria I:** Does the PLC have any concerns or issues regarding the alignment of learning experiences, materials, and resources to: 1. **State Standards** 2. **MYP/DP (if applicable) components** Respond below with a N/A if you have no concerns or provide explicit comments related to	**Criteria II:** Does the PLC have any concerns or issues regarding 1. **Complexity of resources including text and vocabulary** 2. **Controversial topics and issues in learning experiences, materials or resources** Respond below with a N/A if you have no concerns or provide explicit	**Criteria III:** Does the PLC have any concerns or issues regarding 1. **Common Assessment alignment to instruction and/or standards** Respond below with a N/A if you have no concerns or provide explicit comments related to concerns including method of resolution.

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Resource:			
Plan to address issues or concerns noted:			

By typing my name below I am acknowledging that I have fully read, reviewed, listed concerns with resolutions, and approved of all contents included in the unit planner including learning experiences, materials, resources, texts, and assessments referenced on it. All other content and materials not included on the unit planner are the local school's responsibility (BOE IKB).
Curriculum Team Signatures: