

Marietta City Schools

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| Grade & Course: Environmental Science | | Topic: Human Population | Duration: 5 weeks |
| Teachers: Env. Science PLC Teachers | | | |
| Georgia Standards and Content: | | | |
| <p>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).</p> <p>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.</p> | | | |
| 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: | | | |
| <ul style="list-style-type: none"> Scientific and technical innovation | | | |
| Approaches to Learning Skills: (SEPs) <ul style="list-style-type: none"> Develop and Use Models Obtaining, evaluating, and communicating information Analyzing and interpreting data Make guesses, ask what if questions and generate testable hypotheses (ATL Skills) <ul style="list-style-type: none"> Research Skills: Access information to be informed and inform others | Disciplinary Core Ideas: (KNOWLEDGE & SKILLS) <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> Change MYP Key Concepts: <ul style="list-style-type: none"> Change Related Concepts: <ul style="list-style-type: none"> Transformations Interactions | |

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| <ul style="list-style-type: none"> • Communication Skills: Organize and depict information logically | | |
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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”.

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| <p>MYP Objectives</p> | <p>Summative assessment</p> |
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| Criterion A.iii. Criterion D. ii. | <p><u>MYP Assessment Task:</u></p> <p>Criterion A: Knowing and Understanding</p> <ul style="list-style-type: none"> Strand A.iii: Interpret information to make scientifically supported judgments. <p>Criterion D: Reflecting on impacts of science</p> <ul style="list-style-type: none"> Strand D.ii: Describe and summarize the various implications of using science and its application in solving a specific problem or issue <p><u>Unit 4 CSA Assessment</u></p> <p><u>Data Analysis CER</u></p> <p><u>Group/Individual Projects</u></p> | <p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>Summative assessments and Group presentations will allow students to demonstrate their understanding of unit material. Students will also reflect on the implications of science.</p> |
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| Unit Objectives: | | | |
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| Learning Activities and Experiences | Inquiry & Obtain: (LEARNING PROCESS) | Evaluate: (LEARNING PROCESS) | Communicate: (LEARNING PROCESS) |
| Weeks 1 and 2: SEV5c/b | <p>Research and discuss human innovations and their impact on the environment</p> <p>Research and discuss what sustainability is and why it is important</p> <p>Carbon footprint discussion</p> | <p>Students work in groups to research and create posters about an innovation and its impact on the environment</p> <p>Students work in small groups or pairs to design a sustainability plan</p> <p>Students take an online assessment to determine their carbon footprint and its impact on the environment</p> | <p>Students present their posters and pose questions for further potential research</p> <p>Students provide feedback on each other's sustainability plans. Students can be given the opportunity to improve based on feedback</p> <p>Students discuss ways to lessen their personal carbon footprint</p> |
| Weeks 3 and 4: SEV5a/ SEV4c | <p>Population Pyramids</p> <p>TEDEd Video https://www.youtube.com/watch?v=RLmKfXwWQtE</p> <p>Class discussion -- what is "the good life" in US culture?</p> <p>"Day Zero" Capetown case study reading/video</p> | <p>Population Pyramid video quiz</p> <p>Create and analyze a Population Pyramid - graphing activity</p> <p>Human impact vs quality of life CER and reading</p> | <p>Analyze and interpret populations of different countries around the world through a discussion.</p> <p>Students share their CER responses and then have a whole group discussion</p> |
| Week 5: Review and CSA | <p>Review Unit Material with Students</p> | <p>Unit Study Guide Unit CSA</p> | <p>Assessment Results & Recovery Opportunities</p> |

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 |
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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.

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| <p>Criteria I: Standards Alignment:</p> <p><i>Learning experiences should provide alignment to the standards and the MYP subject area guide (if applicable).</i></p> | <p>Criteria II: Materials, Resources, and Text Complexity and Controversial Topics and Issues:</p> <p><i>Materials, resources, and texts are grade level and content appropriate.</i></p> | <p>Criteria III: Assessment Alignment:</p> <p><i>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.</i></p> |
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Common Formative and Summative Assessments

| Assessment Title | Criteria I: Does the PLC have any <u>concerns</u> or <u>issues</u> regarding the <u>alignment of learning experiences, materials, and resources</u> 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 <u>concerns</u> or <u>issues</u> 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). |
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| Formative Assessment(s) : | N/A | N/A |
| Summative(s) Assessment: | N/A | N/A |
| 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 <u>concerns</u> or <u>issues</u> regarding the <u>alignment of learning experiences, materials, and resources to:</u> 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 <u>concerns</u> or <u>issues</u> 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 <u>concerns</u> or <u>issues</u> 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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| LE 1: | N/A | N/A | N/A |
| LE 2: | N/A | N/A | N/A |
| LE 3: | N/A | N/A | N/A |
| 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 <u>concerns</u> or <u>issues</u> regarding the <u>alignment of learning experiences, materials, and resources to:</u> 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 <u>concerns</u> or <u>issues</u> 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 <u>concerns</u> or <u>issues</u> 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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| | concerns including method of resolution. | comments related to concerns including method of resolution. Include the specific quote(s) and reference page numbers or location (ex: time in video). | |
| Resource: | N/A | N/A | N/A |
| 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: