**LEWISBURG AREA SCHOOL DISTRICT**

**LESSON PLAN**

**Teacher Name: \_\_\_\_\_Van Wagner\_\_\_\_\_\_ Class: \_\_\_\_\_\_\_\_\_AP Enviro**

**Topic: \_\_\_ecology and consumption of resources\_\_\_\_\_\_\_\_\_ Date of Lesson: \_\_Class #2\_\_\_\_\_\_\_\_\_**

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| **DESIGN QUESTION FOCUS** | Introducing New Knowledge | Deepening or Practicing | Generating & Testing Hypotheses |

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| **LESSON ESSENTIAL QUESTION**: | How do we use the skills, methods, and processes we learn in science to solve problems? |
| **STANDARD / LEARNING TARGET:** | * Describe the resource use by students in highly developed countries
* Contrast this with resource use by people in less developed countries.

Describe the three most important factors that determine human impact on the environment. |
|  **ACTIVATING STRATEGIES**:(Anticipatory Set) |  Bell Ringer: As the level of affluence goes up (more stuff!) the number of people the Earth can sustain goes down. What are some examples of affluence in our society?  |
| **KEY VOCABULARY**: | observation, hypothesis, variable, independent variable, qualitative observation, quantitative observation, data, conclusion, scientific law, scientific theory, constant, inference, prediction, consumption, renewable, non-renewable |
| **RESOURCES:** | Teacher slide show, demonstration, and lecture.  |
| **TEACHING STRATEGIES**: | 1. Human Impacts on the Environment
	1. Increasing human numbers
		1. Although several million species inhabit Earth, the human species is the most significant agent of environmental change on the planet
		2. Over 6 billion people currently inhabit planet Earth
		3. Human activities, such as overpopulation, deforestation, pollution and species eradication are disrupting global systems
	2. The gap between rich and poor countries
		1. 81% of the world’s population live in poor countries
2. Poor countries fall into two subcategories: *moderately developed countries* (Mexico, South Africa, Thailand) and *less developed countries (*LDCs *-* Bangladesh, Ethiopia, Laos)
3. Nearly one in four people lives in extreme *poverty* which is associated with low life expectancy, illiteracy, and inadequate access to health services, safe water, and balanced nutrition
	* 1. Countries with complex industrialized bases, low rates of population growth, and high per capita incomes are considered *highly developed countries (*HDCs *-* Canada, Japan, the United States, and most of Europe)
4. Population, Resources, and the Environment

Types of resources* + 1. *Nonrenewable resources* are present in limited supplies and are depleted by use (aluminum, tin, copper, fossil fuels)
		2. *Renewable resources* are replaced by nature fairly rapidly and can be used forever as long as they are not overexploited in the short term (trees, animals, soils, fresh water)

Resource consumption* 1. *Consumption* is the human use of materials
	2. A single child born in a HDC causes a greater impact on the environment and on resource depletion than 12 or more children born in a developing country

People overpopulation and consumption overpopulation1. A country is overpopulated if the level of demand on its resource base results in damage to the environment
	* 1. A country can be overpopulated in two ways: *people overpopulation* (LDCs) and *consumption overpopulation* (HDCs)
		2. The amount of productive land, fresh water, and ocean required on a continuous basis to supply a person food, wood, energy, water, housing, clothing, transportation, and waste disposal is termed an *ecological footprint*
2. The *IPAT* model

i. The *IPAT* *model* shows the mathematical relationship between environmental impacts and the forces driving them: *I = P x A x T*ii. The three most important factors in determining environmental impact (*I*) are: number of people (*P*), the affluence per person (*A*), and the environmental effects of the technologies used to obtain and consume resources (*T*)1. Environmental Sustainability

When the environment is used sustainably, humanity’s present needs are met without endangering the welfare of future generationsInadequate understanding of how the environment works and how human choices affect the environment is a major reason that problems of *environmental sustainability* are difficult to resolveSustainability and the Tragedy of the Commons1. Proposed by Garrett Hardin in 1968, he postulates that our inability to solve many environmental problems is the result of a struggle between short-term individual welfare and long-term environmental sustainability and societal welfare
	* 1. Effective legal and economic policies are needed to prevent the short-term degradation of our *global commons*
		2. The shared responsibility for the sustainable care of our planet is termed *stewardship*
	1. Global plans for sustainable development
2. The goals of *Agenda 21* are achieving improved living conditions for all people while maintaining a healthy environment in which natural resources are not overused and excessive pollution is not generated

<http://storyofstuff.org/>Discuss video (students will be making their own later in the year)If time, chapter 1 ppt slides.Chapter 1 questions due next class.Read tragedy of commons.  |
| **EXTENDED THINKING ACTIVITY / ASSIGNMENT:** | Assignment: Huffnagle park permission slips, create science notebook Begin Chapter 1 and chapter questionsRead Tragedy of the Commons |
| **SUMMARIZATION/ CLOSURE:** | Exit Bell Ringer: What does the “P” stand for in the IPAT equation?Answer: *I = P x A x T*ii. The three most important factors in determining environmental impact (*I*) are: number of people (*P*), the affluence per person (*A*), and the environmental effects of the technologies used to obtain and consume resources (*T*) |
| **ADAPTATIONS for****HISTORICALLY UNDERPERFORMING STUDENTS** | Instructions will be given orally as well as in written form.I will continue to develop close personal relationships with my students to better identify ways to reach each learner. |
| **FORMATIVE ASSESSMENT** | Chapter 1 questions will be checked next class.Quiz and exam for chapter 1 TBA. |