Global Population and Ecological Footprints

Teaching Outline and Inquiry Logic Line

Logic step	Activities
Context setting	-Introduce essential questions and a problem; provide some background knowledge Consider elements of critical thinking, frame activity as exercise in critical thinking -Read Zeek and Minny conversation, discuss critical thinking
Part I - Global Population	
Develop tools to explore global population and associated issues: doubling time, rate of change over time, projections	-Introduce Population Brain Twister problem -Graph global population over past several hundred years -Define "doubling time", observe how doubling time has changed, establish current doubling time -Conduct "Best Paycheck Deal" to create a doubling time exponential function, 2^n -Solve "Population Brain Twister" **-Reflect on hypothetical nature of brain twister problem, which logically leads to the idea of ecological footprint**
	-Stand alone supplement: Conduct supplement "Inquiry #2", perspective timeline on appearance of humanity on earth.
Part II - Ecological Footprints and Carrying Capacity	
Define terms: Ecological Footprint Carrying capacity	Variable--use context resources (resource link) and/or simply explain verbally, post on wall

Calculate global footprint of humanity and compare to amount biologically productive land area on earth	Series of problems lead students to discover that we are currently living beyond our carrying capacity ("overshoot"), using more of the earth than we have. This can be analogous to spending more from a bank account each month than is deposited. What will eventually happen?
Part III - Ecological Footprints of Nations	
Compare impact of footprints of various nations and relationship to population	Conduct series of hypothetical calculations if all planet earth had 1) per capital footprint of India, and 2) all planet earth had per capita footprint of the United States. Conduct current projection for global average footprint projection for carrying capacity Utilize population doubling time and exponential doubling function for population growth rate Analyze and interpret the mathematical results
	Conclusions: If everyone lived like people in India we would have yet to reach carrying capacity of the planet. If everyone lived like people in the United States, we passed carrying capacity over a hundred years ago Using global average footprint of all nations, we passed carrying capacity of Earth over 30 years ago.
	Going forward: Consider followup actions, activism, and/or need for further study and research.