Day-by-Day Outline

Day	In-class Question (ICQ) & Homework Question (HWQ)	Activity Work Product	Content Understanding
	ENGAGE STUDENTS		
Preview	HWQ: What species has had the most significant impact on Earth?		
1	HWQ: Supply students with a world map. Have them shade the regions of the globe in which deforestation is occurring presently.	List of evidence supporting student claims for the *most important species on Earth*.	All living organisms have an impact on Earth (and its resources) and thus, have an impact on each other.
	FOCUS ON RESOURCE ECOLOGY AND THE HUMAN CONNECTION		
2	HWQ: Explain why resources are the basis for ecological interactions. Justify your answer by providing an example.	Ecological Web TED Talk "Life in the biosphere" 4-square exit ticket	The relationship among living things is complex, interconnected, and based on resource allocation. Changes in one resource level can cause a ripple effect.
(Optional Lesson 3)		Video- Biosphere Cycles Schematic showing how plants impact each of the Earth's subsystems	Photosynthesis is key to the cycling and flow of nutrients and energy.
4	ICQ: What resources are necessary for survival? HWQ: Describe a resource for which plants and humans both compete. Explain why the resource is	TED Talk class discussion. Students generate a list of resources for which plants (and humans) compete. Students compare rates of	Survival of a species (and an individual within a species) is based on the acquisition of resources. Just as plants need resources,

	necessary for survival. (Formative Assessment)	consumption around the globe, noting the rates on their world map.	humans need resources. Plant systems may be used as a model for human systems.
	PLANNING AN INVESTIGATION		
5-9	ICQ: If all of these plants require the same resources, how is it possible for them to co-exist?	Design and implementation of resource defining investigation. Suggested Homework: Students begin a collaborative Lab Report document and complete the Purpose, Materials & Methods, and Data (set up tables) sections.	Understanding a *niche?*
	ICQ: What is the niche for small and large duckweed?	Collect final data on investigations (complete Data and Analysis sections of Lab Report). Display class data and arrive at class conclusions Assessment: Concluding paragraphs of Lab Report	Defining the niche, resource limitations, for small and large duckweed.
	RESEARCHING HUMAN IMPACTS		
6	ICQ: Why are there hungry people in the world? ICQ: What is the relationship between hunger and power? HWQ: Does human production and consumption of food impact the Earth's subsystems? If	Poster walk around Formative Assessment: Class share-out Summary of thoughts Video "How Wolves Change Rivers"	Food (a resource) is not equally distributed around the globe. Humans impact the production and distribution of food.

	no, why not. If yes, which ones and how?		
7	ICQ: How does what we eat (and how we produce what we eat) have global implications?	Class poll and collection of evidence TED Talk "What is wrong with what we eat?" Exit Ticket: Additional evidence (Formative Assessment)	Our actions impact others and the Earth.
8	HWQ: What are the causes and consequences of global hunger and what can be done to solve the problem? (Summative Assessment)	Class reading "As Children Starve…", with annotations. Investigation and oral defense (group whip) of article claims. If technology is available, videos of the group whip.	Understand how catastrophic weather, climate change, power, and oil prices contribute to food shortages. Understand the causes and consequences of global hunger.
	EXTENSION 1 **PLANTS**		
1-5	ICQ: Which species has the advantage? Why? ICQ: How does a change in environment lead to a change in a population?	Planning and carrying out an investigation involving competition and changes in environmental conditions. (Formative Assessment) 3-2-1 Summaries Poster walk around Topics: -history of food production and agricultural technology (all groups)	Niche conditions determine who will "win" in a competition for survival. When niche conditions change, the balance of who survives and who dies is changed. Humans use technology to "get the advantage" on Earth's systems, but also to get the advantage over each other. Using technology to grow "more food" or

			grow food in "places we should not" impacts the "natural" systems of Earth.
6-10	ICQ: How do you "edge out" the competition? ICQ: How do humans "leverage technology" to increase their competitive advantage? ICQ: What are the implications (to society) when people are hungry?	(Summative Assessment) Laboratory Report Focus mini-Papers -agricultural pollution -fertilizers -hydroponics -GMOs -world seed bank -organic farming -sustainable agriculture -other related topics Class reading "Hunger and children in America…"	Resource availability determines the "winner"- just as "technological ability" and "power" sometimes determine the "winner" in food distribution. Global implications of our actions.
	EXTENSION 2 **WATER**		
1	ICQ: What is the relationship between plants/food, water, and humans? ICQ: Do all humans have access to clean, safe drinking water? ICQ: What makes drinking water unsafe?	Hook with video "Safe drinking water for Africa". Student teams do internet research on one of the ICQs. Homework --Video: "The Clean Water Act…" --Video: "Water and Sewer Systems"	Water Cycle- Water systems are another resource impacted by the human population. Clean water is in short supply. We have developed technologies to "clean" our water.

2	Continued from Day 1	Video- "Water in our Environment" Student teams create a short (1-2 minute) video based on ICQs from Day 1. Videos are posted on the class website. (Formative Assessment) Homework Students share their video with a parent/guardian and receive feedback.	Continued from Day 1
3	ICQ: What is the relationship between water source, human population centers, and agriculture? HWQ: What is the consequence of water diversion?	Students generate local (state) OR world map showing the location of major, fresh-water sources (rivers, lakes, etc.). Human population centers and areas of intensive agriculture are also marked. Locations of major water projects (dams, aqueducts) are highlighted.	Populations need water. Major water projects have been undertaken to divert water to areas of need.
4	ICQ: What is the consequence of water diversion? HWQ: What are the water issues effecting the globe?	Recommended Video Blue/Gold Water Wars (see Resources) Claim, evidence, reasoning paragraph delineating a consequence of water diversion. (Assessment)	Water diversion, for human consumption or use (agriculture, etc.) has ecological consequences. Water diversion has policy impacts (humans fight wars over water rights just as they do over oil).
5	ICQ: What are the water issues effecting the globe? HWQ: How can we use technology to solve a water	Using the textile industry as an example (Google *textile industry and water pollution*) have students research and make a poster (advertisement) educating the public regarding a global	The water system is global in nature.

	issue?	water issue.	
6	ICQ: What does our water quality future look like? ICQ: What are some of the solutions?	Video "Water quality and future generations" Class brainstorm- If you could solve one water issue, what would it be? Why? How?	Awareness of the global water crisis and how technology may be used to solve some of the issues humanity faces.
	EXTENSION 3 **ENVIRONMENTAL CONTAMINATION AND REMEDIATION**		
1	Preview, HWQ: How do our water supplies become contaminated? ICQ: What is hazardous waste?	Hook, Video "The 25 Biggest Man Made Disasters in History" Implement the EPA: Haz-Ed curriculum- Background information.	Humans are responsible for much of the contamination of the Earth's water.
2	ICQ: How close to home is water/soil contamination?	Video: "EPA: Superfund" Conduct an internet search of Superfund sites in your state. Have students mark sites on a class map. Teams research a particular site.	Human made contamination is rampant and close to home.
3-6	ICQ: How do we clean up contaminated sites	Follow the EPA: Haz-Ed curriculum. However, rather than having students simulate a spill, have students first research HOW to clean up a spill. Then, have students implement a simplified strategy for "clean up" at their simulated site.	Emphasis on creating models and simulations