

Student Activity Packet: Life Under The Dome

HWQ: Homework question

ICQ: In-class question

Preview

HWQ: Write a paragraph that answers the question: “*What species has had the most significant impact on the Earth?*” Include two pieces of evidence to support your claim. (Hint: the evidence should explain why/how the species is so important to the Earth.) You will need to do some online research to find supporting evidence. Remember, reliable sources only and include a complete citation.

Day 1

(Optional HWQ: Supply students with a world map. Have them shade the regions of the globe in which deforestation is occurring presently.)

Day 2

ICQ: Ecology Food web: Using the species from yesterday’s whole-class discussion, create an ecological web that clearly demonstrates how species interact with each other and their environment.

TED Talk:

Explain why it took her 4 months to make a pizza in Biosphere 2?

What is meant by a “materially closed system”? What is meant by a “energetically open system”?

What impact do humans have on natural resources? How might that impact change as the human population continues to grow?

HWQ: Explain why resources are the basis for ecological interactions. Justify your answer by providing an example.

Days 3 & 4

ICQ: What resources are necessary for survival?

How have increases in human population and per-capita consumption of natural resources impacted Earth’s systems?

Evidence

- _____
- _____

- _____

HWQ: Describe a resource for which plants and humans both compete. Explain why the resource is necessary for survival.

Days 5-9
 Planning and Carrying Out Investigations

ICQ: If all of these plants require the same resources, how is it possible for them to co-exist?
 ICQ: What is the niche for small and large duckweed?

Green Area- Thoughts and Observations

Explain to a friend how all of these plants can live together if they require the same resources.

Resource Investigations

Once you have decided which resource and which type of duckweed your team will investigate, circle your choice in the table below. Do not forget to list the names of all team members.

Possible Resources	Type of Duckweed	Team Members
Light	sm/lg	
Nutrients	sm/lg	
Space	sm/lg	

Proposed Plan

Question to be investigated _____

Materials

- _____
- _____
- _____
- _____

Methods/Procedure

1. _____

2. _____
3. _____
4. _____

Data Collection

Results Summary (Team)

(Under which conditions did duckweed grow the most? The least?)

Results Summary (Whole class)

Resource	Type of Duckweed	Best growing conditions

Investigation Conclusion

Your job as a scientist was to determine the “species niche” for two newly discovered species of duckweed. Write a paragraph in which you define the niched for each of the new species. Your definition should include evidence from your investigations and should clearly explain how environmental and genetic factors influence the growth of organisms.

Days 5-9

Researching Human Impacts

ICQ: Why are there hungry people in the world?

Claim: The answer to the above question is your claim. _____

Evidence

- _____
- _____
- _____

ICQ: What is the relationship between hunger and power?

Claim: The answer to the above question is your claim. _____

Evidence

- _____
- _____
- _____

ICQ: How does what we eat (and how we produce what we eat) have global implications? Provide two pieces of evidence to support the claim that human production and consumption of food have an impact on Earth's systems.

- _____
- _____

“As Children Starve”

The world experiences food shortages because of...	Evidence	Source
Weather		
Climate change		
Power		
Oil prices		

After researching informational texts (articles, TED Talks, and class discussions) on the human influences on Earth's systems, write a paragraph that examines the causes of world hunger and explains how an unequal distribution of resources plays a central role in this issue. Support your discussion with evidence from your research.

EXTENSION- Student Activity Packet

Plants

Days 1-5

ICQ: Which species has the advantage? Why?

ICQ: How does a change in environment lead to a change in a population?

Days 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?

Water

Days 1 & 2

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?

Day 3

ICQ: What is the relationship between water source, human population centers, and agriculture?

HWQ: What is the consequence of water diversion?

Day 4

ICQ: What is the consequence of water diversion?

HWQ: What are the water issues effecting the globe?

Day 5

ICQ: What are the water issues effecting the globe?

HWQ: How can we use technology to solve a water issue?

Day 6

ICQ: What does our water quality future look like?

ICQ: What are some of the solutions?

Environmental Contamination and Remediation

Day 1

Preview, HWQ: How do our water supplies become contaminated?

ICQ: What is hazardous waste?

Day 2

ICQ: How close to home is water/soil contamination?

Days 3-6

ICQ: How do we clean up contaminated sites?