

SUBJECT-BASED LINKS: Earth Science/Geography (SBL1.1)

Key Concepts	Materials
<i>Environmental conservation, human-environment interaction, invasive species, animal treatment/welfare</i>	Quandary Episode 1: Lost Sheep Internet access Digital Device
Learning Target	Structure
Students will learn about the ethical treatment of wild and domestic animals.	Students should play Quandary in pairs or triads to encourage meaningful conversation during gameplay. Quandary gameplay should be prefaced by a class-relevant warm-up discussion and closed with a post-game discussion and an optional extension activity.

Warm-Up Discussion

ASK students the following questions (and/or create your own):

- “What are some of the ways invasive species colonize new habitats?”
- “How might invasive species affect the ecology of those areas? What about the economy?”
- “What are some of the ways humans interact with the environment to make it better? Worse?”
- “What happens to an animal population when a predator is introduced? How might it affect the food web?” (Use a class-relevant example and depict relationships on the board as a visual aid if needed).
- “What are the effects on the rest of the population when a species goes extinct?”
- “Do you think animal rights are the same as human rights? Why or why not?”

Create your own questions based on relevant class material.

Tell students, “We’re going to be playing a game today that puts you in charge of what should be done about a species of wildlife that’s attacking domestic animals.”

Gameplay

PLAY Quandary in student pairs or triads, encouraging them to bounce ideas off one another and reach agreement before advancing to each next step.

Post-Game Discussion

ENGAGE students with post-game discussion questions (and/or create your own):

- “Were the yashors invasive? Why or why not? How could you tell?”
- “What solution did you choose? What led you to make that choice? Did you use more facts or more opinions from the settlers when making your final decision? What might the consequences of your choice be over the long term for the lambs and yashors?”
- “Was there a better solution to the yashor problem? What else could you have done?”

Extensions and Activities

Divide students into groups based on the solutions they chose and have them argue for their solution, bringing information from the game and connections from class to strengthen their argument. Have students discuss their argument in small groups beforehand and create an outline to stay on track.

Resources

LESSON PLAN *Invasive Species*

<https://learning.blogs.nytimes.com/2010/09/29/natures-invaders-ex-the-effects-of-invasive-species-on-local-ecosystems/>

LESSON PLAN *Human Environment Interactions*

<https://educators.brainpop.com/lesson-plan/human-environment-in-video/>

SUBJECT-BASED LINKS: Earth Science/Geography (SBL1.2)

Key Concepts	Materials
<i>Public vs. private property, resource scarcity, human-environment interaction, water tables, tragedy of the commons</i>	Quandary Episode 2: Water War Internet access Digital Device <i>Water and cups (Optional activity)</i>
Learning Target	Structure
Students will learn about the biological and economic value of water, as well as the importance of water conservation.	Students should play Quandary in pairs or triads to encourage meaningful conversation during gameplay. Quandary gameplay should be prefaced by a class-relevant warm-up discussion and closed with a post-game discussion and an optional extension activity.

Warm-Up Discussion

ASK students the following questions (and/or create your own):

- “What are some ways humans benefit from water? How about animals and plants?” Make a list of student’s responses.
 - “What happens when there’s a drought? What are some ways humans interact with their environments when there is not enough water?”
 - “Do you think access to clean drinking water is a human right? Why/why not?”
- Create your own questions based on relevant class material.

Tell students, “In the game we’ll be playing today, the community is struggling with a water crisis and you will be in charge of deciding how it’s handled.”

Gameplay

PLAY Quandary in student pairs or triads, encouraging them to bounce ideas off one another and reach agreement before advancing to each next step.

Post-Game Discussion

ENGAGE students with post-game discussion questions (and/or create your own):

- “Did Granik have the right to charge other settlers to use the well? Why/why not?”
- “Even If he DID have the right, was it the right thing to do? What’s the difference?”
- “What do you think would happen to the well if everyone had access? What would people need to do to make it sustainable?”
- “What solution did you choose and why? What will the consequences be of your decision?”

Extensions and Activities

One student is keeper of the water (2 liters) and the rest of the students have smaller cups. Teacher instructs students by simply saying, “Everybody fill your cups”. Let the students figure out how using communication and make notes of what you observe. After the activity, ask them what happened, enforcing concepts of resource scarcity, tragedy of the commons, supply and demand, or any other themes relevant to class.

Resources

LESSON PLAN *Water: The ‘Blue Gold’*

http://www.pbs.org/pov/borders/2004/educators/edu_water.html

LESSON PLAN *How Much Water Do We Have?*

<http://www.savingh2o.org/lessonplans/HowMuchWaterDoWeHave>.

ARTICLE *Cape Town Water Crisis*

<https://www.npr.org/2018/02/04/583152356/cape-town-copes-with-crisis>