



Defining Sustainability

Background:

This lesson is based on the concepts of sustainability. Sustainability is commonly defined by the Bruntland Report Definition of Sustainability (1987): “Meeting the needs of the future without comprising the ability of future generations to meet their own needs.” In order to determine if something is sustainable, three elements must be considered: economics, environment, and social equity.

*Note: Part I can be done without continuing on to Part II. Part II can also be done without doing Part I first. In order to do Part II without Part I, prepare a list of global problems (war, poverty, climate change) and global solutions (conscious consumerism, renewable energy, peace).

Essential Questions: *How are global issues interconnected to each other and to the sustainability domains of environment, society, and economy?*

At the end of the lesson, students will be able to:

- 1. Brainstorm and prioritize long-term goals.*
- 2. Define sustainability.*
- 3. Kinesthetically experience the interconnectedness of global issues.*
- 4. Understand how a change in one area can positively and negatively affect a change in another issue.*

Advanced Preparation and Materials:

- Dry erase board and markers or easel paper
- Ball of yarn or twine
- A piece of paper and writing utensil for every student in the class

Standards Addressed: *Geography: C4 Human Systems Human culture, their nature, and distribution affect societies and the Earth. C5 - PO 4 Analyze the environmental effects of human use of technology. PO5 5 Analyze how humans impact the diversity and productivity of ecosystems. Economics: C2 – PO 3 Describe how government policies influence the economy. Science: S2 – C3 - PO 4 Analyze how specific cultural and/or societal issues promote or hinder scientific advancements.*

Themes: Systems Dynamics, Cascading Effects

Skills: Team Skills, Oral Communication

Sustainability Science for Sustainable Schools, a National Science Foundation funded program

Teaching Instructions

1. Introduce the concept of sustainability to the class. Sustainability is more than a concern for the environment; it includes environmental components but also considers economic viability and social equity. Read the Brundtland Report definition for sustainability.
 - a. Have the students brainstorm a list of things they would like to see last beyond their lifetimes or changed for the betterment of future generations. For example, you can say that you would like to have an education system or books available to your grandchildren.
 - b. Have the student's share items from the list, asking them to place the item in one of the following categories: Economics, Environment, Society. Record these lists on the white board/overhead. Ask the students to think of ways that items on the different lists might connect with each other. Present the spherical representation of sustainability (draw the diagram on the board or print a copy of the diagram to share with the class). Discuss how sustainability solutions are where the three spheres: economic, environmental, and social equity meet.
 - c. Allow the students to work in groups to develop their own definitions of sustainability. They can use ideas from the list they generated, the Brundtland Report definition, and/or the spherical diagram. Ask them to share their definitions.
2. After the students have shared their definitions, ask them to each write one of the items off of the list they generated in step 2. The word or phrase needs to be written large enough for someone 10 feet away to read it. Make sure that no two people have the same word.
 - a. Have the students stand in a circle, holding the piece of paper with the word or phrase on it. In classes with more than 16 students break the students into 2 groups.
 - b. Have one student read the sustainability issue on his/her card and then toss the ball of yarn to a student across the circle.
 - c. Have the student (that is now holding the ball of yarn) read the sustainability issue on his/her card and state how this issue is connected to with the previous issue (i.e. healthcare is connected to poverty because most people living in poverty do not have access to basic healthcare; conflict is connected to natural resource depletion; education is related to equity because in a more equitable world more people would have access to education).
 - d. Once the student has stated how her/his issue is connected to the previous one, she/he holds onto a piece of the yarn and tosses the ball of yarn to someone else across the circle.
 - e. Continue the exercise until everyone has caught the ball of yarn, called out the interconnections, and is now holding a piece of the yarn. Have the last student throw the ball of yarn back to you. You should now have a representative 'web' of yarn with every student holding a Sustainability Issues Card and a piece of web.
 - f. Have everyone pull the string so the web is taut. Tug on your piece of the yarn and ask if anyone felt the tug. Have some others tug on the yarn and see who else feels it. Try tugging harder and see who feels it then. Ask what that tug might represent or signify about the connections between global issues. (Optional: you can have one person drop their string and see what connections fall as well).

DEFINING SUSTAINABILITY

(50 minute lesson)

3. Conclude the lesson with a discussion on the significance of the interconnectedness of sustainability issues. Why might it be helpful to understand how and why these issues are interconnected? Can the students think of other issues that might be interconnected like the ones raised in this activity? How can understanding the interconnectedness of sustainability issues help us find solutions to the problems surrounding these issues?

Extensions:

Arrange students in groups of 5 or 6. Give each student a global issue (e.g. Education, health, poverty, war, climate change, clean water, clean air, loss of biodiversity). Ask one student to start by writing 2-3 sentences about his/her global issue and then pass the story to the next student. That student then writes 2-3 sentences that explains how the issue on his/her card is connected to the previous story. They then fold the paper so that only the last story is visible, and pass it on to someone else. Keep passing, writing, and folding the paper until everyone has written part of the connections story. Once everyone has written, have each group open the whole story and read it aloud to the class.

Additional Resources: Facing the Future: People and the Planet and Pfizer's Green Chemistry 'Defining Sustainability' Lesson