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18. Sustainability Lesson #2: THE BIG IDEAS OF SUSTAINABILITY

Kristen Schulte

University of Wyoming, kschulte87@yahoo.com

Ana K. Houseal

University of Wyoming, ahouseal@uwyo.edu

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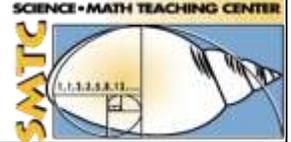
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Sustainability Lesson #2: THE BIG IDEAS OF SUSTAINABILITY

Overview: This lesson explores the main concepts of sustainability through various activities.

Learner Outcomes

Youth will:

1. Understand that complex concepts of sustainability can be understood by exploring the “Big Ideas” found within it.

Getting Ready

Materials: Youth need journals and writing utensils; staff need 2 bike tire tubes and handouts.

Prepare: Prepare for this lesson by setting out the five stations on flat surfaces. They include: *Community – Venn Diagram* worksheets; *Interdependence – Diversity – Human/Nature Scavenger Hunt* worksheets; *Change Over Time – Outdoor space* for participants to find a quiet spot to sit; *Cycles – Cutthroat Trout Life Cycle*

Lesson at a Glance

The Big Ideas of Sustainability Stations (50 minutes)

This lesson consists of five 10-minute stations and a group debrief. The stations explore community, interdependence, diversity, change over time, and cycles.

Concluding the Lesson: Bumper Stickers (10 minutes)

Youth design their own sustainability bumper stickers and reflect on what kind of bumper sticker might teach visitors and employees the “Big Ideas of Sustainability.”

Suggested Procedure

The Big Ideas of Sustainability Stations (50 minutes)

1. Instruct youth to journal by asking them to answer the following questions: **(D1)**
 - a. What does sustainability have to do with me?
 - b. What does sustainability have to do with us?
2. Ask them to share their journal entries and/or thoughts with the group.
3. Use the dry erase board to explain the “Big Ideas of Sustainability”.
 - Make sure youth have an understanding of the definition of terms in the background information before moving on.
4. Introduce the stations by explaining that they will be exploring these concepts in depth through activities at each station.
5. Explain that at each station they will need to:
 - a. Carefully follow instructions.
 - b. Read the “Big Idea.”
 - c. Complete the activities at the station.
6. Divide them into groups of three. Allow 7 minutes per station, and then rotate through as many stations as time allows (Shelburne Farms, 2001) (35 minutes). **(F1)**
7. Afterwards, gather in a large group and debrief by discussing the following questions:
 - a. What “ah-ha moments” did you have?
 - b. What was your favorite idea that someone in your group discussed at a station?
 - c. How can you connect the “Big Ideas of Sustainability” to YELL-YCC?
 - d. How do they connect to your own community?
 - e. How might you communicate the “Big Ideas of Sustainability” to your community? How do you hear about most things in your community?



Background

The following material is used in the suggested procedure and is necessary to instruct this lesson. Adapted from Shelburne Farms (2001).

When talking about sustainability, it is critical to break out important concepts and “big ideas” to make the word come alive. Below is a list of ideas used to frame this lesson.

- Ability to Make a Difference: Everyone has the ability to affect change or impact a system, community, and/or self.
- Change Over Time: All organisms, places, and systems are constantly changing.
- Community: All communities involve nested economic, environmental, and social systems. We need to understand the interconnections to come up with sustainable solutions.
- Cycles: Every organism and system goes through different stages.
- Diversity: Systems and places function because of variety.
- Equilibrium: A balanced state.
- Equity/Fairness: Resources need to be shared to meet the needs of living things across places and generations.
- Interdependence: All living things are interconnected. Every organism, system, and place depends on others.
- Limits: Every system has a carrying capacity.
- Long-Term Effects: We can predict that actions will have effects beyond immediate reactions.
- Place: Natural and human communities together make up one’s place. Every place has its own needs and limits.
- Systems: Elements that affect each other and are connected through larger patterns. (Shelburne Farms, 2001).



Transition: Explain that bumper stickers are a fun way to share or teach others about sustainability.

Conclusion: Bumper Stickers (10 minutes) **(S1)**

This activity is designed for youth to think about transferring what they are learning into ways of helping visitors and employees learn these ideas as well.

1. Instruct youth to think about some of their favorite bumper sticker slogans, as they will be creating their own about sustainability. Encourage cleverness, rhyming, creativity, and originality.
2. Have them create their bumper stickers in their journal and share with the group.
3. Wrap up the discussion by asking:
 - How will your bumper sticker influence and/ or challenge others’ thoughts?

Assessment Check Ins:

(D1): Examines prior knowledge, interests and misconceptions of sustainability, to assist staff in planning instruction.

(F1): This assessment encourages youth to think about sustainability in the big picture.

(S1): Assesses what they have learned and transfers it into their experience at YELL-YCC.



Staff Notes:

1. Confirm that youth have a strong understanding of the terms in the background information before moving on to the activity in this lesson.
2. Make sure that you engage with youth as they go through the stations because it will provide insights for leading the conclusion of the lesson.
3. It is important to connect these stand-alone stations and create a greater understanding that draws on the learning experience of each station. Push them to think deeply about their bumper slogans.

References:

Shelburne Farms. (2001). Education for Sustainability STARTER KIT Sustainable School Project: The Big Ideas of Sustainability. Retrieved from: <http://www.sustainableschoolsproject.org/tools-resources/starter-kit>

Incorporates the “Big Ideas of Sustainability” as the central activity. It was modified in the following ways:

- a. Instructional language was changed to match the REC.*
- b. The introduction and conclusion were additions.*
- c. The station handouts language was slightly modified to reflect place (i.e. youth communities and Yellowstone National Park).*
- d. Some stations were not included because of the time frame of this lesson.*

Yellowstone National Park. (2013). Yellowstone Resources and Issues Handbook: 2013. Yellowstone National Park, WY.

Handouts:

- The Big Ideas of Sustainability Stations



The Big Ideas of Sustainability: Community

A community is a place where different living things share a common space. All communities involve nested economic, environmental, and social systems. We need to understand the interconnections between these three things to come up with sustainable solutions.

Material: Venn diagram handout

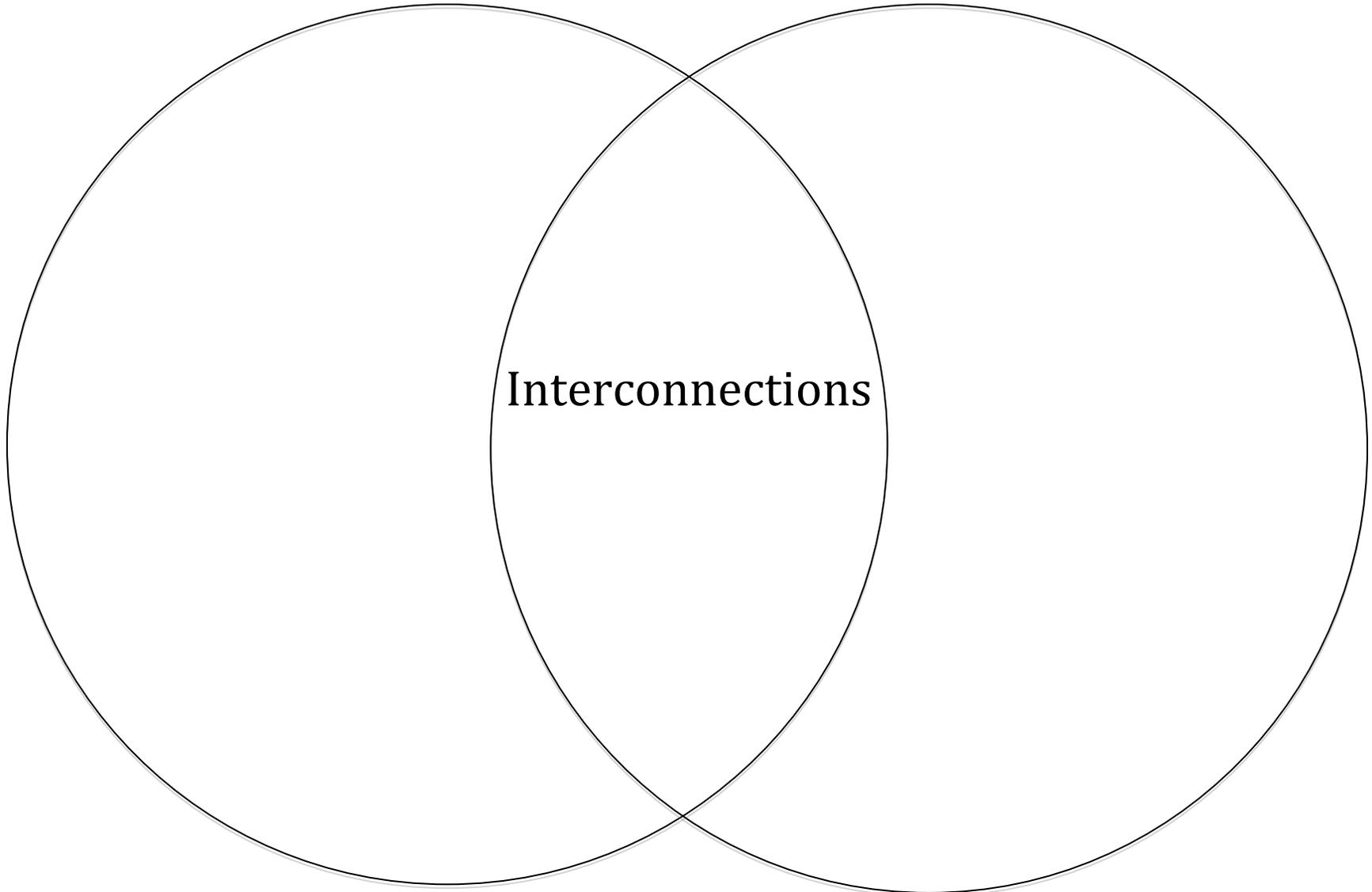
Activity:

Draw a large Venn diagram in your journal (examine the example at the station). Fill in the Venn diagram as follows:

1. Make a list of all the things you and your community have in common in the human world circle.
 - For example: neighbors, grocery stores, barbershops, police.
2. Next, make a list of all the things the natural world around you or your community has in common in the natural world circle.
 - For example: predator/prey relationships, nests, symbiotic relationships, and food chains.
3. Write the things that the human world and the natural world have in common where the circles overlap.
 - For example: families, dependent on water, and reproduction.
4. Answer the following:
 - What communities are you a part of?
 - How do Yellowstone National Park and the natural/world communities overlap?

Natural World

Human World



The Big Ideas of Sustainability: Interdependence

Interdependence is when both living and non-living things depend on each other to survive. All living things are connected. Every organism/system/place depends on others.

Material: 2 bike tire tubes

Activity:

1. Gather your group into a circle and hold hands. Put ONE bike tire tube over one person's arm and reconnect hands.
2. Ask the group to move the bike tire tube around the circle without releasing hands. You will need to step in and through the bike tire tube to make it work.
3. Next add another bike tire tube and send it around the circle in the opposite direction.
4. After completing one round with both tire tubes, complete another round with everyone's eyes closed.
5. Afterwards, answer these questions as a group:
 - Were you successful getting the bike tire tube around the circle? If so, what made you successful? If not, why were you not successful?
 - How did each member of the group depend on the other members of the group?
 - How do we as humans depend on each other (in our neighborhoods, communities, states, countries, world)?
 - How do we depend on nature?
 - How does nature depend on us?

The Big Ideas of Sustainability: Diversity

Diversity is many different kinds of living things. Systems and places function because of variety.

Material: Human/Nature Scavenger

Activity:

1. Complete the Human/Nature Scavenger Hunt, by filling in the sheet with your answers. Look around you to find the answers. If you cannot find examples in this place, you can come up with another example.
2. After you complete the scavenger hunt, ask and answer these questions as a group:
 - How is nature diverse?
 - How are humans diverse?
 - What would happen to both natural and human communities if we lacked diversity?
 - How are the systems and economic markets we create diverse? What would happen if they were not?

Group #1: Human/Nature Scavenger Hunt

Think of someone you know at YELL-YCC that produces food	Find something that stores energy	Think of someone who is good at bringing people together	Find something that keeps systems in check
Find something that produces oxygen	Think of someone that is good at solving problems	Find something that stores water	Think of someone who makes decisions
Think of someone that is good at helping people visualize things	Find something that absorbs CO ₂	Think of someone that is nature smart	Find something that produces energy
Find something that filters waste	Think of someone that is good at building	Find something that eats debris	Think of someone who cares for others

Group #2: Human/Nature Scavenger Hunt

Think of someone you know at YCC that produces food	Find something that stores energy	Think of someone who is good at bringing people together	Find something that keeps systems in check
Find something that produces oxygen	Think of someone that is good at solving problems	Find something that stores water	Think of someone who makes decisions
Think of someone that is good at helping people visualize things	Find something that absorbs CO ₂	Think of someone that is nature smart	Find something that produces energy
Find something that filters waste	Think of someone that is good at building	Find something that eats debris	Think of someone who cares for others

Group #3: Human/Nature Scavenger Hunt

Think of someone you know at YCC that produces food	Find something that stores energy	Think of someone who is good at bringing people together	Find something that keeps systems in check
Find something that produces oxygen	Think of someone that is good at solving problems	Find something that stores water	Think of someone who makes decisions
Think of someone that is good at helping people visualize things	Find something that absorbs CO ₂	Think of someone that is nature smart	Find something that produces energy
Find something that filters waste	Think of someone that is good at building	Find something that eats debris	Think of someone who cares for others

The Big Ideas of Sustainability: Change Over Time

Change over time is how the human and natural world changes throughout time. All organisms/places/systems are constantly changing. The only constant is change.

Activity:

1. Each member of the group should find a spot to sit alone for five minutes. Each member should observe the changes that are occurring presently and/or the changes that have occurred over time.
2. When the five minutes is over, come back together to discuss the following questions:
 - What changes did you observe?
 - How does nature change over time?
 - How do humans change over time?
 - How does nature document change?
 - How do humans document change?

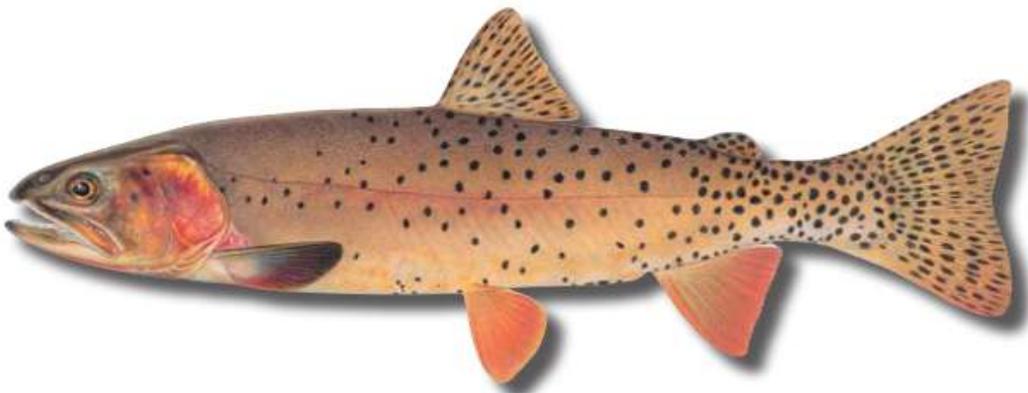
The Big Ideas of Sustainability: Cycles

Cycles are the fundamental patterns in the natural and human world. Every organism and system goes through different stages.

Activity:

1. Together draw the Yellowstone cutthroat trout life cycle in order.
2. Individually pick an item from the list below. Draw the life cycle of the item. When everyone is finished share your drawings and discuss the following questions:
 - What cycles have similar communalities as your other group members?
 - What parts of your cycle are you positive are part of your cycle?
 - What parts are you unsure about?
 - Why do you think this might be?
3. Discuss some of the ongoing cycles that are already part of the YELL-YCC Community. For example: Wake up –Go to sleep- Wake up- Go to sleep. (i.e. day is dictated by sunlight from the natural world)

Image of a Yellowstone Cutthroat Trout



Yellowstone Cutthroat Trout. [Photograph]. Retrieved May 1, 2013, from:
<http://utahflyfishingclub.com/2011/12/24/utahs-native-trout/>

Example of Items for Drawling a Life Cycle

- Newspaper
- Computer
- Tea/Coffee
- Pencil
- Jeans
- Shoe
- Cell Phone
- Can of Soda
- Water Bottle
- Granola Bar
- Olive Oil