Navigating Institutional Barriers Designing First Year Sustainability Workshops

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Navigating Institutional Barriers
Designing First Year Sustainability Workshops

Executive Summary

We sought to increase Smith student’s understanding of sustainability by designing workshops for first year students focused on water and food consumption, actions that can be taken to conserve resources, different transportation options and recycling. In the course of our project, we faced institutional resistance when trying insert a sustainability workshop into the main First Year Orientation Program. This institutional resistance led us to find specific “gateways”, places where first year students can be reached and taught about sustainability, specifically during Orientation Group Programs and during one of the six events HONS (Head of New Students) are required to host for first year students in their houses. Results from our survey showed specific knowledge gaps for the majority of students surveyed in relation to water and energy use on campus. Additionally, over half of the students surveyed were unaware Smith had pledged to become carbon neutral by 2030. Our proposed Sustainability Workshops aim to initially educate students in ways to make more personally sustainable decisions, but ultimately aim to strengthen students problem solving abilities when faced with difficult trade-offs.

Introduction

The United States is facing an overwhelming environmental literacy gap, which only continues to increase (National Report Card 2001 and America’s Low 2002). Environmental literacy is defined by Jim Elder, Founder of The School for Field Studies as, “the capacity of an individual to act successfully in daily life on a broad understanding of how people and societies relate to each other and to natural systems, and how they might do so sustainably” (Elder 2008). Lack of environmental literacy
knowledge threatens environmental, economic, political, and public health security (National Report Card 2001).

Higher education, particularly in the United States, represents one of the greatest, yet often overlooked, opportunities to advance a more sustainable society. Higher education shapes the thoughts and practices of future leaders. It also serves as one of the main channels through which new ideas are adopted into mainstream society, through experimentation and implementation. Higher education provides the ideal environment for adoption of novel practices to address issues relating to climate change. Adapting novel practices, however, requires a re-shifting of priorities both on an individual and institutional scale. Creating institutional change requires strategic thinking and many individuals pulling in the same direction. Increasing environmental literacy of all students on a college campus is, in and of itself a novel concept. Creating the institutional change necessary to implement far-reaching initiatives to increase environmental literacy is a difficult but necessary task in the face of climate change.

Smith College has branded itself as a place that trains “Women for the World”, educating future leaders to close equality gaps and champion a message of social justice. Climate change is and will be to a growing extent one of the main drivers of social injustice. Water resources are becoming increasingly scarce and agricultural yields are predicted to decrease significantly in many nations, including the United States. Climate change is a multi-faceted and intersectional issue that goes beyond simply conserving resources: future leaders will have to grapple with issues of accountability, both for disadvantaged people today and for future generations. Increasing student’s sequestered problem solving skills, is key to create true “Women
Sequestered problem solving is the ability to solve complex issues involving difficult trade-offs. Studies have shown that increasing student’s sequestered problem solving can help them succeed later in life (McKenzie, 2015). We believe better sequestered problem solving skills will shape Smith students into future leaders equipped to deal with climate related issues.

Programs designed to educate students about sustainability vary widely, and the means to assess the efficacy of said programs are still being developed and refined. At Harvard University, interactive activities were organized to assess the knowledge of and teach the incoming freshman class about sustainability. They designed a “Recycling Challenge” where students had to sort common items into compost, recycling, trash, and e-waste canisters. Students who participated in this activity were rewarded with reusable bags (Hammer, 2014). Interactive and experiential learning techniques were used in almost every sustainability training initiative that we found. Experiential learning provides an opportunity for students to understand in depth what is being taught and engage with material in a hands-on manner, as such, we thought it would be appropriate to design sustainability workshops that use interactive learning techniques as opposed to lecture-style formats.

Our initial project plan focused on the creation a sustainability workshop to provide incoming Smith students with a basic understanding and awareness of sustainability. We drew on past research conducted by ENV312 students in 2005 and 2007, which both focused on increasing environmental literacy of students at Smith College. A project from ENV312 students in 2005, titled “Getting on the Same Page: Communication and Cooperation at Smith College” showed that the top three, on-
campus issues students were concerned with were food waste/disposal, paper waste and water waste (Mooney, 2005). However, when students were asked what they believed Smith’s environmental concerns were and what they thought they should be, the majority of students didn’t know what they were neither did they have any idea of what they should be (Mooney, 2005).

A project from ENV312 students in 2007, titled “Developing a Pre-Orientation Program on Sustainability at Smith College”, focused on the design of a proposed four-day long pre-orientation program focused on educating students about the steps that Smith has already taken to become more sustainable, such as reductions in energy consumption, incorporation of local foods and compost systems in dining halls, and the creation of Ford Hall, a new environmentally conscious building, as well as possible ways Smith could become more sustainable, such as consolidation of dining halls (Erlij et al., 2007). The proposed program also had a section geared towards teaching new students about current and past student sustainability initiatives and environmental groups on campus (Erlij et al., 2007). Currently, the proposed pre-orientation program has yet to be implemented. Analysis of research done by past ENV312 students show that efforts to engage and educate the general student body at Smith about sustainability have been generally unsuccessful. One notable exception to this finding is the Sustainability Workshop run by David Smith during First Year Orientation.

David Smith, the Head of the Environmental Science & Policy department at Smith, runs a two-day long sustainability workshop during the Orientation Group Program time. Orientation Group Program time is a two-day period during First Year Orientation when students break into smaller groups and do activities of their choosing.

1 We used this information when designing our proposed sustainability workshops.
David’s workshop admits approximately 20 students each year. David’s workshop focuses on sustainability and building an ecological sense of place, and has participating first year students conduct activities such as riding public transportation to a given location and a sustainability house-hunt, in which students count the number of plugged in electrical appliances in a room of their house.

We began our project by isolating a specific problem: Most Smith students graduate without a basic knowledge of climate change and environmental issues. Our proposed solution to address this problem was to have all students graduate from Smith College with an increased awareness and understanding of sustainability.

**Methods**

**Survey**

We surveyed 42 First Years and 29 Seniors at Smith College, giving us an overall sample size of 71. The main goals of our survey were to determine:

1. The number of students using specific environmental resources at Smith
2. Level of importance of environmental issues
3. Students environmental literacy rates

We used a standard 2 sample t-test to compare the environmental literacy scores of First Years and Seniors.

**Interviews**

We conducted a total of six interviews with various members of the Smith community. Since each person spoke about different issues, I did not follow any specific interview format. Below is a list of the people I interviewed and the general theme of questions that I asked them:

- **David Smith, Chair of the Environmental Science and Policy Department**
I asked David for specific information on the sustainability workshop he leads during Orientation Group Program time. We also discussed past projects from ENV312 that have tried to increase Smith students’ environmental literacy. We met for approximately half an hour on February 18, 2016.

- **Marge Litchford, Dean of First Year Orientation**
  I proposed a sustainability workshop to be implemented during the 2016 First Year Orientation. After this proposal was rejected, we discussed other possible ways to have first year students participate in sustainability workshops. We met once for approximately half an hour on March 3, 2016.

- **Sara Dorsey, Head of Outdoor Adventure Orientation**
  I asked her whether a sustainability workshop could be implemented during the Outdoor Adventure Hiking programs. I also asked for her guidance in designing lesson plans that could be tailored to fit a mobile, outdoor setting. We met twice: First for approximately an hour on March 23, 2016. We then met on April 14, 2016 for an overnight trip to Macleish where I taught Outdoor Adventure Orientation Leaders ways to discuss principles of sustainability with their first year hiking groups.

- **Hannah Durrant, Assistant Director of Residence Life**
  Areej Jahangir met with Hannah to discuss the possibility of making one of the mandatory HONS/first year bonding events be a sustainability workshop. She met once, for approximately half an hour on March 22, 2016.

- **Greg White and Amy Rhodes, Study Group on Climate Change**
  Areej Jahangir met with Greg White and Amy Rhodes to coordinate our efforts to educate Smith students in principles of sustainability with the initiatives being conducted by the Study Group on Climate Change. Areej communicated with Amy Rhodes via email and met with Greg White for approximately half an hour on March 9, 2016.

  One of the only ways to guarantee the introduction of key ideologies to most, if not all, first year students as they enter Smith is through the First Year Orientation Program. Given this limitation, we initially focused on the creation of a sustainability workshop taught during the 2016 First Year Orientation. Our proposed workshop time frame was a half-day. We proposed that students break into smaller groups to draw flow charts of Smith College's food and water systems, and have Orientation leaders trained...
to fill in any gaps. We also proposed a competition where students try to sort items
from the recycling and trash as quickly and accurately as possible. Lastly, we proposed
a “sustainability scavenger hunt” in which first year students are broken into small
groups and given a list of environmental and sustainability resources (both people and
places) to find on campus. Groups that find all resources the fastest would be
compensated with a prize.

Once the initial workshop design was complete, we contacted Marge Litchford,
Assistant Dean of Students, who is in charge of coordinating the first year orientation
program, to see whether it would be possible to fit a sustainability workshop into the
2016 First Year Orientation. When meeting with Marge, I first asked what, if any, were
the major issues she dealt with during the First Year Orientation and what her main
goals were for students participating in the orientation program. One of the main
issues, according to Marge, was the fact that there is no mechanism for ensuring that
first year students attend the main, planned events during orientation. As a result, some
students missed out on the program all together. Two of the main goals of Orientation
are to familiarize students with their new surroundings and facilitate activities where
students can begin forming connections with one another. I explained to Marge that
some of our proposed activities, such as the sustainability scavenger hunt, aligned
directly with the goals of the Orientation Program by familiarizing students with their new
campus. Our proposed workshop was denied by Marge, on the grounds that there is not enough
time for a workshop on sustainability during the main Orientation schedule. Instead, Marge
proposed that we implement “sustainability interventions” throughout the 2016 First Year
Orientation.
After meeting with institutional resistance, our group re-assessed the overall goals and specific plan of action for our project. We found that our main goal, for students to graduate from Smith with increased awareness and understanding of sustainability, had not changed, but the methods to achieve this goal had to shift. We determined key times when first year students at Smith can be reached to teach them basic principles of sustainability, and developed lesson plans for each of these times. For one of these times, the Hiking Orientation Group Program, I met with and trained the Hiking Orientation Leaders to familiarize

Results

Survey Data

Almost all Smith students surveyed had visited the Paradise Pond Pathway and Botanic Gardens, but only 20 of the 71 students surveyed had visited the Office of Campus Sustainability. Four students out of 71 had visited the Smith College Co-Gen plant. More comprehensive results regarding sustainability and environmental resource use on campus are shown in Figure 1.

As illustrated in Figure 2, first year and senior students surveyed answered, respectively, 34% and 33% of environmental literacy questions correctly. To provide a basis of comparison, a separate group of seven Environmental Science & Policy majors took the same survey answered an average of 50% of questions correctly. Overall, both students ranked their knowledge of environmental issues and sustainability as having increased since attending Smith. But results from a two-sample t-test comparing first year and senior environmental literacy scores showed no statistical difference between the two groups scores.

- Calculated two-tailed P value = 0.9877
• Confidence interval ranges were $-0.238 < P < 0.235$, since $P$ was not within this range, the difference was not statistically significant.

Focusing on answers to specific environmental literacy questions, we found that 40% of students were unable to correctly identify what the largest use of energy was on campus (heating of buildings) and 70% of students were unable to correctly identify the largest use of water on campus (food production, including agriculture). As illustrated in Figure 4, 94% of students thought the amount of greenhouse gas emissions coming from heating, cooling, and lighting our campus buildings was significantly lower than it is in reality (90%). Additionally, 51% of students surveyed were unaware Smith had pledged to become carbon neutral by 2030.

Interviews with Hannah Durrant, Head of Residence Life, and Sara Dorsey, the Head of Outdoor Orientation, showed us two specific places where sustainability workshops for first years could take place: during the Orientation Group Programs and during one of the six first year bonding events HONS are required by the Office of Residence Life to host. We created lesson plans to teach principles of sustainability during the Hiking Orientation Group Program (Workshop 1) and the Macleish Orientation Group Program (Workshop 2). We also created a lesson plan to teach principles of sustainability during one of the six mandatory first year/HONS bonding events (Workshop 3). We received approval from the Head of Residence Life and the Dean of First Year Orientation to make one of the six mandatory events be a sustainability workshop.

Discussion
Results from our survey show specific gaps in Smith students’ knowledge of issues related to sustainability. Students lacked basic knowledge of which sources on campus create the most greenhouse gas emissions and which sources use the most water on campus. Additionally, the majority of students surveyed were unaware of the monumental pledge Smith has made to become carbon neutral by 2030. The fact that there was no statistically significant difference between first year and senior students points to the fact that currently, Smith College does not have any mechanisms in place to increase the general student body’s environmental literacy. Without basic knowledge of the resources that sustain us, the way in which these resources are used, and the way we as individuals and as an institution are working to mitigate climate change, it may be difficult for students to fulfill the goal set out in Smith’s mission statement, to “prepare women to fulfill their responsibilities to the local, national and global communities in which they live and to steward the resources that sustain them.”

In terms of sustainability and environmental resources used, we found that the environmental resources where students can put in low effort and enjoy contact with nature are being used most, such as the Paradise Pond Pathway and the Botanic Gardens. Sustainability resources such as the Smith College Office of Campus Sustainability and Co-Gen plant are underutilized in comparison, possibly because students are unaware of their presence. Our proposed sustainability workshops may serve to increase interest in sustainability resources, as students gain an understanding of how and why sustainability is important.

The workshops we have designed aim to increase students knowledge of environmental issues and strengthen their sequestered problem solving skills. Initial
interventions, in Workshop 1 and Workshop 2 work to increase student’s awareness of the resources they use in a positive manner, and show ways to reduce resource consumption on an individual scale. We used the gaps in students knowledge found through our survey to shape our workshops (ex. Workshop 1 focuses on water use as it relates to agricultural production). Workshop 3, the Sustainability Game of Life, focuses sustainable personal choices, but also aims to strengthen students’ ability to problem solve later in life. Strengthening Smith student’s sequestered problem solving skills in the context of sustainability will, we believe, make students more able to grapple with wicked problems created by climate change after graduating. Climate change is not a localized issue. As such, our efforts to educate students about sustainability should not be localized to a specific group of students on campus but rather broadened to encompass all Smith students.

In the short term, I recommend implementing lesson plans we have created. I also recommend surveying first year and senior students in coming years each year to see the rate of change in environmental literacy of students before and after sustainability workshops are implemented. This data could be a useful tool in assessing whether current efforts to educate students about sustainability are successful in terms of increasing students overall environmental literacy. The low percentage of questions answered correctly on our environmental literacy survey suggest that questions should be made less difficult; asking more basic questions (i.e. which sources of energy are sustainable or unsustainable) may yield more informative results.

In the long term, I recommend the implementation of a Sustainability Workshop during the main Orientation Program to ensure all students are taught basic principles of
sustainability, but there are issues to consider with this approach. Students receive so much information during the First Year Orientation that they may not be able to as able to retain information related to sustainability as they could at other times. Additionally, as Marge Litchford explained, there is no system of accountability to ensure all first year students attend Orientation activities. It is likely that the implementation of a single sustainability workshop during Orientation would not reach some of the first year students. Ultimately, we recommend that all Smith students graduate with basic knowledge of climate change.

To tackle institutional resistance at Smith, I recommend clearly linking sustainability with Smith’s mission to educate students about social justice when meeting with “gatekeepers” such as the Dean of First Year Orientation. I also recommend connecting with members of the Board of Trustees who may support proposed sustainability initiatives. We found out after the end of our project that at least one member of the Board of Trustees is pushing for a sustainability orientation program. This information may have helped persuade Marge Litchford, Dean of the First Year Orientation, to include sustainability in a prominent way in the Orientation program.

Future research on the most effective ways to teach principles of sustainability on college campuses would help build a stronger foundation for efforts to increase Smith student’s environmental literacy.

**Literature Cited**


Appendix

- Statistical Analysis Table and Figures
- Sustainability Survey
- Timeline of Sustainability Workshops
- Workshop 1
- Workshop 2
- Workshop 3
Statistical Analysis Table and Figures

Statistical Analysis Table

<table>
<thead>
<tr>
<th>Group</th>
<th>First Years</th>
<th>Seniors</th>
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<tr>
<td>Mean</td>
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<td>0.3320000</td>
</tr>
<tr>
<td>SD</td>
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<td>0.2333400</td>
</tr>
<tr>
<td>SEM</td>
<td>0.0730194</td>
<td>0.0824981</td>
</tr>
<tr>
<td>N</td>
<td>8</td>
<td>8</td>
</tr>
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</table>

*Results of a two sample t-test comparing environmental literacy scores of first year and senior students

Use of Environmental and Sustainability Resources on Campus

Figure 1
Figure 2 was calculated based on the percentage of correct answers to six environmental literacy questions.

![Environmental Literacy Scores](image)

**Figure 2**

Figure 3 - Question: What percentage of Smith College's greenhouse gas emissions come from heating, cooling, and lighting our campus buildings?

![Figure 3](image)
Smith College Sustainability Survey

1. Are you an international student?
   Yes ___  No ___

2. Which most closely describes you?
   ○ First Year
   ○ Senior

3. Did you attend an outdoor adventure orientation program? Please circle which one:
   ○ Overnight on the Appalachian Trail
   ○ Sleep On Campus with a Day-Long Adventure Trip
   ○ Macleish Field Station
   ○ Other: __________
   ○ Did not attend

4. Please check off the places below that you have visited:
   ○ Smith College Botanic Garden
   ○ Macleish Field Station
   ○ Smith College Office of Campus Sustainability/CEEDS
   ○ Smith College Community Garden
   ○ Northrop/Gillet Vegan and Vegetarian Dining Halls
   ○ Paradise Pond Pathway
   ○ Smith College Boathouse
   ○ Any local farms in the Northampton area
   ○ Smith College Co-Gen Plant
   ○ Grow Food Northampton Community Garden

5. Please check off which, if any, of these organizations you have participated in during your time as a student at Smith (all that apply):
   ○ Food Recovery Network
   ○ Green Team
   ○ Eco-Reps
   ○ Outdoor Adventure Club
   ○ Five College SCOPES
6. How would you rate your knowledge of environmental issues and sustainability before attending Smith?

<table>
<thead>
<tr>
<th>No knowledge</th>
<th>A little knowledge</th>
<th>Basic knowledge</th>
<th>Generally knowledgeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

7. How would you rate your knowledge of environmental issues and sustainability now?

<table>
<thead>
<tr>
<th>No knowledge</th>
<th>A little knowledge</th>
<th>Basic knowledge</th>
<th>Generally knowledgeable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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</table>

8. Please rank the following environmental issues on a scale of 1 to 5 (with 1 being “this issue does not interest me” and 5 being “I am highly interested in this issue”)

a. Food waste

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
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| 1. Sustainable Food Choices

<table>
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<th>1</th>
<th>2</th>
<th>3</th>
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<th>5</th>
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| 1. Energy usage

<table>
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<th>1</th>
<th>2</th>
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<th>5</th>
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</table>
| 1. Water usage

<table>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</table>
| 1. Recycling

<table>
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<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
| 1. Climate change

| 1 | 2 | 3 | 4 | 5 |

9. Would sustainability training have been useful during your First Year Orientation?

Yes ___ Not Sure ___ No ___
10. What percentage of Smith College’s greenhouse gas emissions come from heating and cooling on campus buildings?
A. 35%
B. 74%
C. 15%
D. 90%

11. On average, what is the ratio of land use between a plant based diet and a meat based diet?
A. 1:2
B. 1:4
C. 1:10
D. 1:18

12. A LED light bulb burns for _____ years and a regular incandescent light bulb burns for _____ years.
A. 200 hours, 5,000 hours
B. 50,000 hours, 1,200 hours
C. 200 hours, 40 hours
D. 5,000 hours, 4,000 hours

13. How much water is used on average per person per day in the United States?
A. 30 gallons
B. 5,000 gallons
C. 100 gallons
D. 600 gallons

14. What requires the largest amount of water for Smith College?
A. Food Production (including all agriculture)
B. Cooling the Campus Power Plant
C. Showers, Drinking Water, and Campus Maintenance combined

15. How much of Smith’s electricity comes from fossil fuels?
A. 100%
B. 52%
C. 98%
D. 76%

16. What is the largest use of energy on Smith College campus?
A. Laptop and Cell Phone Chargers
B. Heating of Buildings
C. Lights in Buildings
D. Energy Required to Cook Food

17. Carbon neutrality is “…having no net greenhouse gas (GHG) emissions, to be achieved by eliminating net GHG emissions or by minimizing GHG emissions as much as possible, and using carbon offsets or other measures to mitigate the remaining emissions.” Are you aware that Smith has pledged to achieve carbon neutrality?
A. Yes
B. No

18. If yes, please enter the year that Smith plans to reach carbon neutrality.
A. 2020
B. 2025
C. 2030
D. 2035
E. 2040
F. 2045
G. 2050

Timeline of Sustainability Workshops

Outdoor Adventure Orientation Sustainability Workshop (September 2nd - 4th)

- Lead by Orientation Leaders during Hiking Orientation Trips
- Focused on Composting, Water Use, Food Choices

Macleish Sustainability Workshop (September 2nd - 4th)

- Lead by Orientation Leaders during Macleish Orientation Trips
- Focused on Recycling, Composting, Waste Reduction

HONS/First Year Sustainability Workshops (September 2nd - December 19th)

- Lead by HONS any time throughout first semester
- Focused on Energy, Food, Transportation
Workshop 1

Outdoor Adventure Orientation Lesson Plan: Sustainable Water and Food Use

Objectives
1. Students will gain a greater understanding of water use and personal activities where water is expended the most.
2. Students will learn about how to compost food at Smith College.
3. Students will recognize that different food choices vary in how much water and energy they use.

Opener
3 minutes

_When departing for hiking trips, Orientation Leaders will discuss “Leave No Trace” Practices in the context of sustainability._

Today we’re heading out to hike and we’ll be trying as best we can to Leave No Trace. How many people know what leave no trace means? (take responses)

Often times we think of Leave No Trace Policies as being just for camping and hiking in the woods, and making sure we leave those woods as good if not better than we found them. And if we’re all excellent campers, hopefully we’ll do that. But often times we leave the woods and go back to our regular lives, where we actually leave a lot of traces on the planet. So during the course of this trip we’re not only going to be coaching you in how to Leave No Trace over this weekend, but also throughout your time at Smith and beyond by making sustainable choice in terms of water and food usage.

First Lesson: Water
5 minutes

_When campers wake up in the morning, they’ll be in need of fresh water. If there is a river or body of water that groups pass over on the trip, it would be an ideal time to stop and have a discussion about water._

So is everyone drinking enough water? I want to talk with you guys a little bit about water usage. Over the course of this trip, we’ll use less than three liters of water person per day. Your water bottles are each about one liter, so we’ll drink two of those a day and use some water for cooking tonight (or yesterday, depending on when discussion is occurring). Can anyone guess how many liters of water the average American person uses per day? (take responses, hopefully using some push and pull)

*Answer:* 379 liters! Considering that water shortage is the #1 global threat to societies, as announced by the World Economic Forum in January 2015, maybe we should think about cutting back. So why are we using so much less water on this trip? (take responses)
Answer: Taking showers, flushing the toilet, running a dishwasher, and watering lawns. Also through the food we eat, because crops and animals require a whole lot of water – we’ll discuss this further later.

Now I’m not saying you guys should never touch a toilet again…although you could. But following a “If it’s yellow let it mellow” rule and only showering every other day will cut your water use a significant amount. It’s great that we’re using so little water this weekend!

Second Lesson: Composting
10 minutes
As students “pack out” in the morning after their overnight, take out two plastic baggies and explain basic rules of composting.

This year, all the hiking orientation trips are separating their left over food and garbage so we can compost our food scraps. Does anyone know why we compost?

Answer: When we compost our food, it can turn back into nutrients and be used as fertilizer for farmers to grow more food. And who doesn’t love food? Basically rather than dumping our scraps into a landfill, where they can never be used again, we’re returning the nutrients in our food to cycle through the environment.

Assist students in separating trash and food scraps into the two separate bags.

When students return from their overnight hiking trips, Orientation Leaders can lead them to the nearest Compost bin (located behind Tyler dining hall) and dump the compost with their group.

Third Lesson: Food Choices (optional)
3 minutes
While students are eating breakfast in the morning, start this discussion. Warning: this can be a sensitive topic. One of your main goals as Orientation Leaders is to make sure all students feel welcomed, included, and comfortable, so keep the discussion positive! If a discussion becomes too negative, verbal attacks begin, or if one individual’s diet choices are dominating the discussion, change the subject.

You might have noticed that all the food Smith has provided on this trip has been vegetarian. I talked with you all at the beginning of the trip about the Leave No Trace policy, and how we can extend that philosophy into our everyday lives. As it turns out, meat leaves a pretty big trace. One hamburger takes 2,500 liters of water to make - the equivalent of showering for two weeks straight! Beans on the other hand, besides being the magical fruit, are much lower impact (about 190 liters of water per serving). Just by eating vegetarian this weekend, we’ve saved thousands of liters of water and lessened our impact on the earth.

Workshop 2

Macleish Field Station
Plan:
Sustainability through Food

Time:
60 minutes total

Supplies:
One pound of plastic
Recyclables and other materials (cans, plastic bags, plastic bottles, paper, napkins, etc.)
Projector, computer/tablet, or printed sheet or paper with images

Objectives:
1. Students will recognize that waste can be reduced through using reusable water bottles, plates, and utensils (amount of plastic disposed each year with reference (bucket of plastic?) and where does that stuff go)
2. Students will know what can and cannot be composted (what does it mean to compost and why can’t it be composted?)
3. Students will learn about the difference recycling and composting makes at our college and nationally.

Group Leaders:
This lesson plan is written as a workshop for students during lunch. The sub sections in the lesson plan can be picked altered to fit the group demographic. Attempt to understand the students’ previous knowledge of and interest in recycling and composting. The information provided ranges from teaching students about how to recycle with regards to the different sections to the opportunities at Smith to get involved. If the general class already knows how to recycle plastic, that sub section can be skipped. This is a general lesson plan and can be molded to fit the group and time limit.

Opener:
(5 minutes)
While Getting Lunch
As students come back to the field station for lunch, group leaders should make an announcement requesting students to discuss, with other students, what sustainability means to them while they get lunch. Students do not need to formally define sustainability, but rather provide examples and consider sustainability in their lives. This should be to get the students thinking about sustainability and become interested in learning about sustainability with regards to food and supply waste and Smith’s local food movement.
Recycling and Composting Introduction
How many of you already recycle or compost? (show a raise of hands)
Why do you recycle or compost? (choose a student with their hand raised)

Does anyone have a guess on how much of what we throw in the trash can be recycled and composted? (choose a student with their hand raised)

More than half of what we throw in the trash can be recycled and about a quarter can be composted. A popular misconception is that it’s harmless to throw food and paper scraps into a landfill since they should biodegrade. But, when they break breakdown in a landfill, they produce methane and contribute to greenhouse gas emissions. By recycling, the materials can be reused to produce new materials and by composting, the materials decompose into the soil and provide the soil resources.

First Lesson: Recycling
(20 minutes)

How much plastic is trashed each year?

At each of your tables, there is a pile of plastics. In your groups, determine which ones can be recycled and think about why it’s recyclable or not recyclable. Can plastic bags be recycled? What about water bottles or plastic forks? Considering how often we trash plastics and how much our peers trash plastics, instead of recycling them, what’s your guess on how much plastic the average person trashes per year.

How many of these (the pound of plastic brought to Macleish) are trashed every year? Over 2500 times this amount ends up in landfills every year.

What is the effect of trashed plastic?

Where do you think trashed plastic goes? (Ask the question to the group and have them raise their hands)

Plastic is disposed into landfills, parks, waters, and thrown into random locations, like the sides of streets. Worldwide, 8 million metric tons of plastic goes into the water each year. Think about what Paradise Pond would look like if our plastic trash ended up there (see image 1). Trashing plastic is killing animals, carrying bacteria between continents, and contaminating water. For example, birds eat plastic, which intoxicates them, chokes them, and kills them.

Image 1: Plastic in Florida Waters

Where should plastic go?

Plastic doesn’t break down and lasts hundreds of thousands of years. Look at the recycling sign on the bottom of some plastic materials on your tables. There are a total of seven numbers with each number referring to a different type of plastic. For example, 1 is for plastics that allow bacteria to accumulate and is typically for plastic bottles like water bottles, beer bottles, mouthwash bottles, and peanut butter bottles.

How do we recycle?

There is a pile of material at each of your tables. Work together as a group to sort this material between

How does recycling make a difference?

All the stuff we have, our glasses, plates, computers, phones, were produced with the use of energy. When we recycle, we are saving energy on producing new products because recycling
uses an item's embedded energy. Recycling materials not only decreases waste, but it also uses
less energy for producing new items. For example, recycled paper uses 44% less energy than a
new sheet of paper.

Second Lesson: Composting
(15 minutes)

What does it mean to compost?
Along with recycling, there is composting. How many of you have heard of composting? (Show
of hands).

Can one of you, in your own words and understanding explain what composting is?
(Choose a student who raised their hand and allow them to give a quick explanation of
composting).

A compost is a mixture of decaying materials used for fertilizing soil. This means that items like
banana peels will break down in the soil and provide resources to the soil and plants. Composting
not only provides important resources to the soil without the use of fertilizer and pesticides, but it
also significantly reduces the production of greenhouse gases if these materials were landfilled.

What can and cannot be composted?
Typically, many Smithies do not finish all the food on their plates during meals and a lot of that
food can be composted. Nationally, about 25% of the stuff we trash could be composted. To help
us compost, we are going to discuss some food items that can and cannot be composted.
Vegetables, fruits, and tea bags are three major items in our dining halls that can be composted.
These are also considered “green” compostable items because they rot quickly and provide
moisture and nitrogen to the soil. Some foods that we have in our dining halls that cannot be
composted are meats, bones, and lemon/lime. Earlier I mentioned how fruits and vegetables can
be composted, so why not citrus? (If a student raises their hand, allow them to answer first).
Lemons and limes have a high pH and are very acidic, which is harmful to the soil and plants.

A paper with information on foods that can and cannot be composted is going around, but
Smith’s dining halls also have signs saying what can and cannot be composted as a reminder.
As lunch finishes up, think about what can be composted.

How does composting make a difference?

So, we’ve discussed what it means to compost and what we can compost, but how does
composting make a difference? Composting provides nutrients to the soil that are typically
provided by fertilizers. By eliminating fertilizers, we are also eliminating the greenhouse gas
emissions from producing fertilizers. Compostable items play different roles in being
supplements for the soil; some provide nitrogen and moisture, while others help the soil keep
carbon dioxide. Smith’s compost goes to local farms in Westhampton, Massachusetts and helps
with the production of more food.

Opportunities at Smith to get involved:
(10 minutes)
During this lunch, you’ve learned a bit about recycling and composting at Smith College and I would now like to tell you about some of the resources available at Smith to help the college become more sustainable. Smith already looks to buy locally grown food, but the local food movement on campus is pushing for the college to invest more time and money towards buying locally grown food and encouraging sustainable behavior. In addition, the Food Recovery Network aims at fighting food waste and challenging hunger by recovering and donating dining hall food that would otherwise go to waste. Smith College also regularly hosts zero waste food events where all the materials, whether its utensils, napkins, plates, cups, or the food itself, can all be recycled and composted. They are constantly looked for students to participate and after you complete your first year at Smith College, they also offer work-study positions. You can learn more about these initiatives and many other sustainability opportunities at Smith’s Center for Environment, Ecological Design, and Sustainability in Wright Hall. Emma Kerr is a great contact as the Campus Sustainability Coordinator.

As we end, I want to leave you with two pieces of important information. First, Smith College allows students to eat from any dining hall and get food multiple times. With this resource, you have the opportunity to get less food at first and go for seconds if you would like more. Secondly, if we all recycled and composted, the impact would be equal to using 75% less electricity. These two facts show that we have the opportunity to be more sustainable through recycling and composting and how big the impact would be.

Learning about recycling, composting, and food waste isn’t just something we do at Smith, but something you can do wherever you are. It doesn’t take any more time than throwing your materials in the trash; all it takes is awareness and an interest in being environmentally friendly.

**Workshop 3**

**House First Year Activity**

**Plan:**
Game of Life - Being Sustainable: the Environment, Economics, and Society

**Time:**
1 hour

**Objectives:**
1. Students will learn about the tradeoffs required to become sustainable with the available resources
2. Students will recognize the importance of economics, society, and the environment for becoming sustainable
3. Students will be aware of their current “eco-score” and hopefully be inclined to be more vigilant of their actions and the personal and societal consequences of those actions
Preparation:
Print out worksheets for the first years
Put the game of life presentation on a projector or TV screen
Review the objectives and directions

Explanation:

The Game of Life is meant to teach about decision making. It teaches about trade-offs, unintended consequences, risk or uncertainty, and payback periods.

You will be choosing three things: A Light Source, Food, and Transportation. Your different options will vary in terms of time spent, your “Eco-score” which corresponds to how environmentally friendly you are, and the amount of money you have. Be careful! Choose wisely as there will be surprises and consequences along the way. Money rolls over from one round to the next, but time does not. Energy can last more than one round, so you do not need to deduct the cost if your source of power is still lasting but you do have to add the ecopoints.

The different salary values and time allotments are to show that different people have different available resources and for you to consider how you can use and make decisions with the resources available to you. And remember: You cannot spend more time or money than you have.

Fill in Income profile according to Birth Month

• January - June: 5 Bits
• July - November: 10 Bits
• December: 15 Bits

Fill out time available according to Birthdate

• 1st to 15th: 4 hours
• 16th to 31st: 6 hours

– Mark the appropriate spaces on your worksheet.

Round 1:

You will first make a choice for energy source. Your choices vary in terms of time, cost, duration (or how long the bulb will last you), and Eco-Points. The fewer eco points you get the better! Next you will make a choice about food. Notice that each choice has a money cost, time
cost, and eco-points score. Lastly you will make a choice about transportation. Again, notice that each choice has a money cost, time cost, and eco-points score. Remember -- the fewer eco points you get, the better!

Make sure you didn’t exceed your income of time and money! If you DID, or if you can’t make a choice because you don’t have enough time or money: Go back and change your light, or food choice so that you can afford a transportation option (time and money). Money savings can be added to next round’s income, but time cannot.

Questions to consider after the round: How does your income affect what you can choose? What tradeoffs did you make? In the context of Smith, what tradeoffs do you make in terms of dining (i.e. do you ever have to get a less quality meal because you’re rushing to class?)

Round 2:

For round two, you will again have to choose an energy source, a food source, and a transportation method. But before you choose, a hurricane hits, driving up gas prices. In this round only, driving will take two hours and six bits. Remember to add your savings from round one to your salary this round. Time from the last round does not carry over to this round.

Lighting: If you bought a CFL or LED, you don’t have to spend time or money on it this round. DO add Eco-Points for this round.

If you take your car, it takes two hours and six bits.

Questions to consider after the round: How did uncertainty affect your decisions so far in the game? Do you think uncertainty plays a major role in any decisions you make in your life? What have you prioritized most in the decisions you’ve made in the game thus far? What do you prioritize most in the decisions you make in life?

Round 3:

Again, you have to choose an energy source, a food source, and a transportation method. But, there are three aspects to consider when making your decision. Firstly, if you bought CFLs in the first round, they need to be replaced now and so you need to purchase a new method of energy. Secondly, transportation costs have come back to normal. Finally, if you are low on income with 5 bits, you can apply for food assistance from the government, but it requires two hours to complete the paperwork. SNAP, the food assistance program will provide you with 2 more bits each round. This is an example of a trade off where our society’s provides a resources to deal with poverty, while still requiring the resource of time.

After you have made your decisions, turn to the person next to you and discuss the 2 questions of round 3 about payback periods. A payback period is the amount of time it takes for a purchase to get back the cost put towards it.

Questions:
Has the benefit of lightbulbs having a payback period affect your decisions? What are some things you have bought while at Smith that could have a payback period?

Round 4:
Woah! If you’ve been eating fast food for 2 or more rounds and haven’t biked 2 or more times, you just had a heart attack. This medical situation just cost you 3 bits and 1 hour, showing that there are unintended medical consequences as a result of our actions.
After learning about the resources available for low income individuals and payback periods in the previous rounds, consider the unintended consequences of fast food.
Questions:
If you had previously known about this unexpected consequence of eating fast food, would your decision have been different? Would you have been able to choose a different source of food based on your available time and money?

Eco-Score Calculation:
Add up your Eco-Scores from each round to determine your ecological footprint. If you have a score lower than 19, you’re eco-friendly, if your score is between 20 and 27, you’re eco-aware, and if your score is above 28, you’re an eco-disaster! Each action we take has a consequence, whether positive or negative.
Our actions also have an impact on the general community, so we’re going to share everyone’s scores to determine our house’s eco-score.
(If more than half the class has an eco-score above 28)
One environmental consequence of environmental negligence is air quality and a consequence of bad air quality is health problems, like asthma. With more than half of our group having scores above 28, and therefore causing eco-disasters, everyone has developed asthma and has to pay 5 bits to see the doctor. If you don’t have 5 bits saved up, you die :’(.
This also shows the importance of saving up and the importance of working not only independently but also as a community to become more environmentally friendly.

Personal and Class Evaluations:
Before we end today’s workshop, I want to leave you with a few questions to think about during your time at Smith and when making future decisions. Were your choices good for your health and environment, and why does it matter? What variables were there as you made your decisions? Are you satisfied with the tradeoffs you had to make?