Field Study: Bioengineering and the Piedmont Biofarm

Course Overview

Students will spend two weeks learning about ancient and modern biotechnology and compiling an "Omnivore's Toolkit" of practical information on food choices, in order to prepare for a visit to Piedmont Biofarms, an innovative organic farm in Pittsboro, NC. Students will also prepare for the experience of visiting the farm by participating in a seminar discussion on carrying capacity, sustainability, and GM foods. At the Biofarm, students will take a guided tour and have the chance to interview Doug Jones, an elder in the world of organic farming with 42 years of experience and a Harvard education.

Through the experience of harvesting and preparing a meal for themselves and for a local free community meal, they will have the opportunity to appreciate the abundance of the land and to reflect on the importance of all people having access to high-quality, safe, healthy, and affordable food.

Guiding Questions

- What are the underlying beliefs that shape the different modern approaches to growing high-quality, safe, healthy, and affordable food?
- How does bioengineering affect our role in the ecosystem we belong to?
- What have been the societal impacts of agricultural developments in history? Has bioengineering created a comparable societal shift?
- Is it possible or desirable to return to the methods of farming practiced before the latest developments in bioengineering?
- Does biotechnology have a positive or negative effect on our ability to protect our ecosystem? our planet?
- How do you know if you are making the food choices that are best for you?

Course Objectives

- Students will be able to engage in argumentative and persuasive speech regarding aspects of biotechnology including:
    - Genetic engineering
    - Biotech careers
    - Effect of biotech on North Carolina's economy
    - Ethical issues
    - Implications for agriculture and ecosystems

  (North Carolina Science Essential Standards 8.L.2.1)
- Students will understand their place in a diverse ecosystem. They will be able to describe how that ecosystem is affected by the everyday food choices they make.
- Students will be able to analyze and, if necessary, modify the practices of our classroom community in light of their deepened understanding of our place in our ecosystem.

Leadership Rubric

Students' leadership rubric for the day will help them reflect what they did to make this event meaningful for Community 5. To help the students, we will take some time in the classroom to think about these questions:

- How meaningful do I plan for this experience to be?
- How much risk am I willing to take?
- How much do I plan to participate?
- How committed am I to the good of the group?

Community Building

In morning meetings the week before leaving for our trip, students will be encouraged to bring greetings and reflections about their interactions (rich or scarce) with the natural world.

During the trip, there will likely be time for impromptu group initiatives:

> Buzz: How were people standing and how did their faces look while we were playing? Is this game more fun when it's hard or when it's easy? What number would be the most fun to play "Buzz" with? Think about the people you saw having fun - what did you notice about what they were doing?
>
> Sticks: Did the game feel fast or slow to you? What might a person do to improve their chances of winning at Sticks? Is it more fun or less fun to use a strategy? Think about the people you saw having fun - what did you notice about what they were doing?

After the trip, there will be follow-through to help students develop ways of translating their learning into action within the classroom community. Will they decide to take on a worm bin? A plot of our school garden to grow a small symbolic measure of food for themselves and the wider community?

Community Service Component

Students will take time while making their own lunch to also make food to feed 75 additional people. This food will be taken to a center that serves free community meals, either in Durham or in Pittsboro.

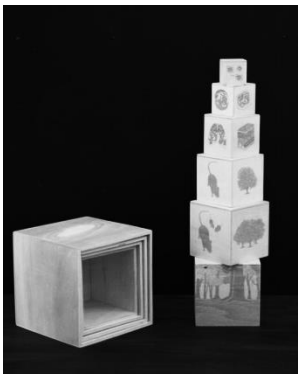
Itinerary

7:30 morning meeting at school, opening activity
8:00 board bus
8:50 arrival
9:00 farm tour / gardening
10:30 lunch prep and kitchen cleanup
12:00 lunch and socializing with staff
12:30 Farmer Doug interview
1:00 departure
1:50 return to school, closing activity

Daily Assignments

Please see calendar.

Opening and Closing Ceremony



Biome nesting boxes: the galaxy, solar system, biosphere (Earth), biomes of the Earth, ecosystems, populations of plants and animals, individual plants or animals, tissues and organs of an individual plant/animal, cells, atoms.
(sold at wasecabiomes.org/products/cosmic-nesting-boxes, DIY at http://bit.ly/1jURCZW)

Opening impressionistic lesson: un-"nest" the boxes one by one, going from big to small. Focus on the wonder and beauty that can be found at of each level of scope, and our personal investment at each level. Anticipate what we will see at the Biofarm, and reference what we know from our ecosystem and biotech lessons about what is going on at each level.

Opening impressionistic lesson: Reverse the process. Start from the specific of what we experienced today, and meditate on how our particular experience affects the way that we will interact on the broader levels.

Budget

Piedmont Biofarm Trip				
Number of students: 50				
Bus		$300.00		$300.00
Tour		$5.00	each	$250.00
Produce	for students' meal	$1.50	each	$75.00
	for service project	$100.00		$100.00
Cooking lesson		$100.00		$100.00
Total				$825.00
Cost per student				$16.50

October 2014

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	6 Lesson: Ancient biotech (*Seeds of Change*, early ag movie excerpts)*	7 Ancient biotech mini research project	8 Ancient biotech: share research, seminar prep	9 Lesson: Modern biotech (SciAm video, GM techniques)	10 Seminar on Biotech: Malthus or GMOs?	11
12	13 Introduce "Omnivore's Toolkit" project. Read *Omnivore's Dilemma:* "I Plant Corn," "Frankenseeds"	14 *Omnivore's Dilemma* lit circle. Work on "Omnivore's Toolkit"	15 "Omnivore's Toolkit" project work day	16 Lesson: background on Piedmont Biofarm & Piedmont Biofuels	17 Field Study prep worksheet (including interview questions)	18
19	20 Lesson: Garden safety, kitchen safety, grace & courtesy	21 Field Study	22	23	24	25
26	27	28	29	30	31	

*Differentiation ideas: *Botany of Desire* instead of *Seeds of Change*

Name: _____

Leadership Rubric for Piedmont Biofarms

Behaviors Associated with a '4'

Self		Teacher
☐	Always on time & ready to go	_____
☐	Respectful when others are talking	_____
☐	Treats others with respect	_____
☐	Flexible and easy going	_____
☐	Offers to help others	_____
☐	Looks for things that need to be done	_____
☐	Willing to try new things, food included	_____
☐	Attempts to hang out with different people	_____
☐	Thinks about the good of the group	_____
☐	Uses independent work time wisely	_____
☐	Observant, making connections to science	_____
☐	Practices garden & kitchen safety	_____

Behaviors Associated with a '1'

☐	Is careless of the environment *(e.g. walks on the garden beds, litters, etc.)*	_____
☐	Disregards safety of self and others	_____
☐	Uses inappropriate language	_____
☐	Negative attitude about food or activity	_____
☐	Looks for ways to get out of work	_____
☐	Late for meeting times	_____
☐	Disrespectful to others	_____

Grade You Deserve for the Day

1 2 3 4 _____

Comments:

Dear Community Five Parents and Guardians,

On Tuesday, October 21st, your child will join our community on a field trip to the Piedmont Biofarm in Pittsboro, NC. This visit will be a unique hands-on environmental experience at this year-round, suburban vegetable farm on the campus of Piedmont Biofuels. The Biofarm is known for their innovative sustainable practices and for their brilliant lead farmer, Doug Jones. The day will include a tour of the farm, cooking lessons, and interviews with young and veteran farmers. There will also be a service component in which our community will create a nourishing meal to be served at a Durham area soup kitchen. Depending on circumstances, our trip could also include some gardening. Whatever the trip entails, we are sure our students will return filled with excitement and knowledge and a better understanding of the science and philosophy behind modern approaches to growing high-quality, safe, healthy, and affordable food. We are excited to share this experience with them!

To ensure that your child has a fun and safe time at the Biofarm we ask for your help with the following:

* Wear appropriate footwear (tennis shoes or hiking boots). No sandals please.
* Dress appropriately for the weather in layers. Layers can always be removed!
* Protect your child from outdoor conditions such as the sun, mosquitos, and ticks. Suggestions are available at the website http://bit.ly/1ltXG03.

Permission slips will be due on Friday October 16th.

Thank you for your help in creating a positive experience for your child! For more information about the Piedmont Biofarm or the Abundance Foundation, you can visit their websites, piedmontbiofarm.blogspot.com and abundancefoundation.org.

Sincerely,

Ms. Nesbitt and Ms. Stefan

Remaining Work

AS SOON AS POSSIBLE
Continue email communication with Jenny Schnaak at the Biofarm, Jlschnaak@gmail.com.
Check about pre-made food donation with Patrick O'Neill or with Pittsboro Free Community Meal at St. Bart's.
Get form from Tami to give to Sheldon

- connect to standards, etc.
- can't do anything until Sheldon signs his approval

THREE WEEKS IN ADVANCE
Write & distribute permission slip forms

- Tami helps. Will get Spanish/English

Notify

- teachers
- lunch staff

Book transportation

- Wanda or Crispell if they're free
- Or book a bus thru Jerrica
- Needed info: start time, number of kids, adults, zip code of destination, pickup time

Figure out food

- head count to give to lunch staff, for absentees and brown-baggers

CONTINUOUS
Permission slip followup:

- parent communication: send permission slip reminders home, explain academic tie-ins
- check that form is filled out correctly
- check medications / organize medications
- each day receipt the money as it comes in (hint: shorter window is less hassle! On the other hand longer window gives kids more time.)

ONE WEEK IN ADVANCE
Discuss expectations with students

- any special dress code
- behavior / anticipated challenges
- where will we be eating? etc

BEAR DOWN ON KIDS WHO DON'T HAVE SLIP.
Call to confirm reservations / head count
Find "home" for kids who aren't going & reach out to teachers for permission

WEEK OF
Come up with school schedule for the day
Organize materials for the day:

- permission forms
- medication from classroom and/or front office

AFTER
Submit permission forms and receipt to Tami