Applications of the Thanksgiving Address in the Social and Natural Sciences

Bonnie General-Vazquez and Valerie Goodness

ISEP Interdisciplinary Science and Engineering Partnership

Buffalo State The State University of New York

Thanksgiving Address

The Thanksgiving Address is an Haudenosaunee greeting that gives respectful thanks to The People , The Earth Mother, The Animals, The Trees, The Birds, The Four Winds, The Thunders, The Waters, The Fish, The Plants, The Food Plants, The Medicine Herbs, Grandmother Moon, The Stars, The Enlightened Teachers, and The Creator.

Our projects will be presenting the cultural applications of the Thanksgiving Address to the social and natural sciences. We chose to present the Waters, Fish, and Food Plants portion of the Thanksgiving Address and their interdisciplinary connections to Industrialization and World War II in Buffalo, New York.

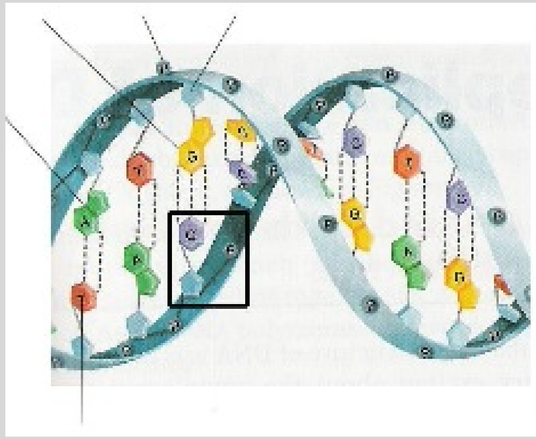
Food Plants: Strawberries

~*~ The Food Plants ~*~ With one mind, we turn to honor and thank all the Food Plants we harvest from the garden. Since the beginning of time, the grains, vegetables, beans and berries have helped the people survive. Many other living things draw strength from them too. We gather all the Plant Foods together as one and send them a greeting and thanks. Now our minds are one.

Strawberry DNA

Bonnie and Valerie in the Natural Science center Lab extracting DNA

The class will extract DNA from strawberries. There will be a discussion about what can be learned from that DNA. To learn how strawberry DNA can help the Haudenosaunee or protect their intellectual property rights through case studies like corn DNA in Genetically Modified Organisms.



http://www.docstoc.com/docs/23121933/Laboratory--Strawberry-DNA-Extraction

The Waters:

~*~ The Waters ~*~ We give thanks to all the Waters of the world for quenching our thirst and providing us with strength. Water is life. We know its power in many forms-- waterfalls and rain, mists and streams, rivers and oceans. With one mind, we send greetings and thanks to the spirit Water. Now our minds are one.

Water Quality pH

http://water.epa.gov/type/rsl/monitoring/images/fig52_2.jpg

The class will test water samples following the Environmental Protection Agency's specifications. We will be testing the pH and how temperature effects pH. Temperature changes like climate change might change the pH levels of local rivers in negative ways.

Bonnie testing pH changes on water samples

The Fish:

~*~ The Fish ~*~ We turn our minds to all the Fish life in the water. They were instructed to cleanse and purify the water. They also give themselves to us as food. We are grateful that we can still find pure water. So, we turn now to the fish and send our greetings and thanks. Now our minds are one.

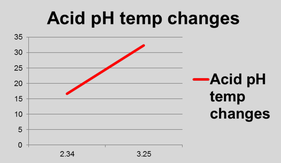
The Fish and pH

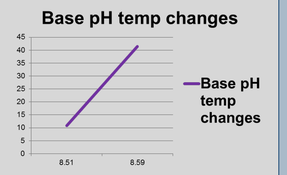
The class will discuss the effects of pH changes on local fish species. If pH changes with temperature then how will fish be affected during climate change

The Rainbow trout (*Oncorhynchus mykiss*)

http://upload.wikimedia.org/wikipedia/commons/b/b9/Rainbow_Trout.jpg

Results





ACID/BASE changes	ACID pH	
ACID temp	16.6	2.34
	32.3	3.25
	BASE pH	
BASE temp	10.8	8.51
	41.4	8.59

Conclusions

Food Plants: Strawberries

Western New York native species strawberries are culturally significant to the Haudenosaunee. DNA shows how closely related all of our relatives are, human and nonhuman. It also opens opportunities for corporations to take DNA and patent it like some have done with corn, which is also a culturally significant plant species to the Haudenosaunee

The Fish The Waters and pH

There are 29 fish species living in the Buffalo River. (NY DEC 2005)Among them are Rainbow trout which survives in stream water temperatures ranging from 5°c to 25° c and the pH ranges of (egg/fry 4.5-5.5 to 8) Adult 4-8. (Dept. of Fisheries 2001) The Buffalo River has exceeded the pH TMDL allowances greater than 36% of the measurements below pH of 6 and above 8.5 of the measurement criterion. (Final Buffalo Creek pH TMD 2002) If pH changes with temperature then climate change will effect the Buffalo River increasing risk to Rainbow trout, as our water sample experiment shows.

References / Acknowledgements

Acknowledgements: Angelina Montes for her help with chemistry and lab work at UB, We are grateful for the ISEP grant allowing for this project to happen, and School 19. References from The US Environmental Protection Act, The NY Department of Environmental Conservation and the NY Department of Fisheries