

# Roosevelt University GEAR UP Summer Academy 2006



J u n e 2 3 , 2 0 0 6  
Science Class

### *Things I learned this summer...*

"It has improved my math and science." - *Stevlan*

"I know how to take better Science notes." - *Tuaniece*

### *Things you'll remember from the Summer Academy...*

"I would remember the careers from Science class and I would remember some of the careers I did not know was real or existed." - *Chloe*

### *What would you like to study next summer...*

"More Science, hands-on!" - *Ariell*

"I will like to study science, growth and developing." - *Jolantra*

"I would like to study with chemicals in Science." - *Joslyn*

"I witnessed evidence of students working in teams, observing safety guidelines, working as scientists by organizing their notes and gathering data." – *Ms. Ingram, 8<sup>th</sup> Grade Science Teacher*

"They are so motivated but need the challenges this program brings. I think many students improved their problem solving skills and know more about careers which should motivate them." – *Mr. Ziencina, 7<sup>th</sup> Grade Science Teacher*

<http://cuip.uchicago.edu/schools/gearup/>

# Enviro Sleuths

8th Grade Science

Designed by

Arleta Ingram



## To Students

More than ever, human impact and technological advancement is affecting Earth's natural resources by polluting our waters and air quality, creating waste management and sewage treatment problems, over developing open land areas and depleting wildlife habitats. Well, it is time YOU do something about it! As an Enviro Sleuth, you will accept the challenge to help correct some of these issues brought about by man.

You will conduct your investigations and research in one of our state of the art laboratories equipped with the best quality apparatus, lap tops with wireless Internet, field guides and notebooks. For the next few weeks, you will analyze the contents in soil, conduct experiments to compare the moisture retention ability of a variety of soil types and observe oil-hungry microbes as they degrade miniature replicas of an oil slick on a beach and in an ocean. You will also spend many hours researching environmental issues or careers, which are of particular interest to you, such as water pollution, air quality, waste and sewage solutions. You will also have opportunities to do some fieldwork so that you can make observations and gather data.

Lastly, you will prepare a final presentation piece (brochure, power point, poem) detailing an environmental career or issue you researched or give a synopsis of your experience and the connections you made to the study of the environment and related careers.

# Environmental Challenge

7<sup>th</sup> Grade Science  
Designed by  
Mr. Ziencina  
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## Introduction

This unit is designed to teach students about the environment and encourage them to think about careers in this field. They will have the opportunity to do experiments in a laboratory setting and study nature.

## Outcomes/Curriculum Standards

Students will learn how to conduct laboratory activities, testing water and sediment samples. They will also learn how to work cooperatively for a given purpose. Students will observe organisms that exist in an urban habitat and notice how limiting factors affect population size. They will draw inferences as to how communication, observation, problem solving, data gathering and interpretation along with teamwork are key skills that students will utilize during their investigations and out in the field. We are trying to give these students the chance to work like a scientist.

## Products or Performances

Students will be completing worksheets, graphs of their data. They will be completing journal entries describing their thoughts while doing these experiments. Students will also be responsible for completing an end of the summer project. They will make a project board or power point presentation about an environmental problem. ( acid rain, global warming, ozone depletion, pollution) They will learn about the environment doing an internet search and will complete the corresponding worksheet. They will complete a worksheet that goes along with their field trip to the Stillman Nature Reserve and complete journal entries about the activities learned.

## **Evaluation**

The indication that each lesson was successful is that the students are engaged and having fun while they are learning.

## **To Students**

Human beings have made great advancements in technology and improving the quality of life for us. Along with this we have created new problems such as polluting our water, land and air. As scientists we are going to study these environmental problems and study water samples along with various aquatic life in a laboratory setting.

You and your fellow scientists (classmates) will do research on computers about various environmental problems and then report to the educational community about your findings with a power point presentation or brochure. You will also be working in a science lab to test various water samples to test for pollutants and search for small aquatic creatures. You will get a chance to work in many different aspects of a scientist (environmentalist, laboratory technician, biologist) to find out if you have any interests in this field as a career. By the end of the summer you will be challenged to help us understand and solve some of these environmental problems we face.

## **Process**

Each day students will do hands on experiences in a computer lab or do work in a laboratory setting. Parents or aides will assist with lab and computer activities.

### **Day One**

Students will conduct an internet search about the environment. We will have a discussion about the environment and discuss careers in this field. Students will also research an environmental problem they would like to do research on.

### **Day Two**

Students will test various water samples from lakes, ponds and rivers. They will test water for PH, acidity, hardness, nitrates, temperature, and other pollutants. They will look for organisms and be expected to identify them using charts.

### **Day Three**

Students will look at a simulated town with a pollution problem using an Envirolab Kit. They will test sediments, and water to look for lead, PCBs and nitrates. They will be scientists trying to solve an environmental disaster. Additional time will be used toward final projects.

### **Day Four**

Urban Nature Search

Students will collect information about various organisms (trees, animals, flowers, etc) in an ecosystem. We will look at their interdependence and adaptation to their habitat with a focus on biodiversity. Students will play an ecology game called "O Deer". All additional time will be used on final projects.

### **Day Five**

The final day will be used to complete their final projects. Students who have completed their projects will look at owl pellets.

## **Resources Needed**

Describe what resources you'll be using to implement this lesson.

- Microscopes
- Slides and Coverslips
- Blind folds
- Masking tape
- Magnifying glass
- Wax paper
- Water samples
- Balloons
- Glass jars
- Triple beam balance
- Graduated cylinders
- Clipboards
- Computers

## 7<sup>th</sup> Grade Science – Environment

- Rewritable CDs
- Flags (flag football)
- Eye droppers
- LCD projectors
- Web Sites Used

<http://homepage.mac.com/cohora/ext/enviro.pdf>