Habitat Ecology Learning Program for Elementary Teachers
Online Course

Habitat loss is the greatest threat to the world's biodiversity. Living things have evolved over millions of years to exist in particular environments. We call those environments habitats, and we say that species are adapted to them. The interrelationships among plants, animals, climate, and seasons of a particular habitat are complex and fragile. When that habitat is destroyed, degraded, or modified, the species that live there are usually affected. Teaching students about habitats is not enough. To appreciate the connection between habitats and species loss, students need first need to understand what makes a habitat, why habitats are located where they are, and how plants and animals are adapted to the habitats in which they live. Students need to understand basic ecology.

Learning about the natural world is important it. It is in the education standards and environmental change is becoming an important social and political topic. We will be exploring some of the following questions in this course: How do habitats form and what are some changes that are occurring right now? How did we get all this biodiversity? How do we classify this biodiversity? How are organisms adapted to the world we live in? How do organisms interact with their environment and each other? How can you make teaching about nature relevant to your students? Through exploring these question you will gain background knowledge in habitats and wildlife, learn about basic ecology, adaptations, how organisms interact with their environment, and the interactions between organisms in a temperate forests and wetlands. Course members will explore humanity's influence and interaction with nature and discuss teaching ecology to elementary school children.

COURSE OBJECTIVES:
Explore the factors that influence habitats and communities.
Identify the characteristics of five types of habitats.
Evaluate adaptations and the structure and function of organisms.
Explore the reasons we see so much biodiversity
Understand how scientists classify organisms
Explore adaptations found in temperate forests.
Trace energy flow through a temperate forest.
Explore the factors that create different types of wetlands
Understand the services wetlands provide
Develop an understanding of humanity's role in the environment.
Discuss teaching strategies for enhancing student learning of habitat ecology

COURSE OUTLINE

Module 1: *Habitat Ecology* will introduce you to basic ecology, five types of habitats, and factors that influence habitat structure and species composition.

Module 2: *Biodiversity* will investigate why the planet has so much biodiversity and how that biodiversity is classified by scientists.

Module 3: *Adaptations* will explore the characteristics that help plants and animals survive in their habitats.

Module 4: *Wetlands* will explore how the different types of wetlands provide essential ecological services and how human interactions with wetlands have changed over the years.

Module 5: *Temperate Forests* will investigate how organisms are adapted to live in the temperate forest habitat and explore interactions between organisms.

Module 6: *Humans and the Environment* will introduce human interactions with habitats and the topic of conservation. As well as creating strategies and techniques for enhancing student learning and understanding of the environment and our interactions with it.

PARTICIPANT LEARNING RESPONSIBILITIES

Each module will consist of an introduction to the topic, a discussion question, required and suggested reading and an individual or group project. Participants are expected to read through the course material, research and compile information to contribute to the discussion, and work in a group to create a product to share with the class. Students are required to keep track of the course schedule, submit assignments on time, and participate in the discussion with at least two relevant postings. Each week students should spend between 7-12 hours on reading, researching, discussing, and writing for the course.

GRADING

Discussion

Introduction 5 pts
Habitat Discussion 10 pts
Biodiversity Discussion 10pts
Adaptation Discussion 10 pts
Wetland Discussion 10
Temperate Forest Discussion 10 pts

Course Projects

Habitat Box 15 pts individual (Due February 12th)
Adaptation journal 15 pts (February 26th)
Wetlands lesson 10 pts group and 5 pts individual (March 11th)

Final Project

Creative Learning Project 40 pts (March 21st)

Evaluation Survey

Completion of surveys and questionnaires about the course 20pts (These only be graded as complete or incomplete the content of the course will not be graded.)

DISCUSSION QUESTIONS:
You will be assigned to a Discussion Team. Each week you will have a new topic to discuss. You should use information from the course as well as outside research to answer the question. You will need to post at least two times to your discussion group. Your **first post** should be a half page to a full page in length and should reflect your opinion on the question as well as some research you have found on the topic. **This post will be due Thursday at midnight.** Your second post should be a reflection on what has been said so far. This is the minimum requirement. You may find yourself posting more often, but with shorter responses. This is fine. At the end of each week, one person from your team will need to post a **summary of your team's discussion** to share with the rest of the class and the instructor. You should alternate this responsibility among members of the team. **This will be due Monday at midnight.** You will be graded on your individual participation in the team discussion as well as your team summary. In all of your posts you need to cite where you gathered your information. You can use any citation standard you want. We recommend APA. If you need help with how to cite references you can try http://www.liu.edu/cwis/cwp/library/workshop/citapa.htm for a guide.

D-1. Introduce yourself
Write an introduction letting us know a little bit about you. Describe where you teach, your experiences teaching, and why you are interested in this course. If you would like attach a picture. Sometimes it is nice to put a face with the name.

D-2 Habitat Discussion Question
Making nature relevant to students can be a challenge. Too often students feel separate from nature. But we are a part of the natural world and we interact with it and rely on it. **Describe ways that habitats are important in your life.** Please use personal examples as well as research ways that habitats provide services to people and to your community in particular. How will people become more aware of the services provided by nature?

D-3 Biodiversity Discussion Question
Nature is constantly changing and species are being defined and going extinct all the time. There have also been periods of mass extinction in the history of earth before humans came around. **How is human caused extinction different from natural extinction? Is human-caused extinction unnatural?**

D-4 Adaptation Discussion Question
Adaptation is a sophisticated concept that has a lot of subtleties, but it is also an essential topic for students to learn so that they can better understand the world around them. **How do you teach adaptation in the classroom?** Compare your strategies and concepts to those presented in the course materials and readings. Is the concept of adaptation over taught or not taught enough?

D-5 Wetlands Discussion Question
Wetlands have significantly diminished in the United States in the last two hundred years, and similarly in other parts of the world. **What role could wetlands play in the increasingly unstable weather (hurricanes, droughts, etc.) the world is seeing?**

D-6 Temperate Forest Discussion Question
There are many threats facing temperate forests around the world. **What do you think will happen to Temperate Forests in the next 50 years and why?** Please cite specific examples and evidence that helped shaped your thinking.

WEEKLY PROJECTS
(please see project descriptions on the class site for individual project rubrics)

P-1 Virtual Habitat Box
At the Bronx zoo we give teachers in the HELP program a Mystery Box filled with objects that represent characteristics of a given habitat. They work in groups to figure out which habitat the box represents, identify the items in the box, and describe what they represents. For teachers we use this as an introduction, but in the classroom this becomes a good assessment tool. Students who have learned about a habitat should be articulate about what they find in this box and how it relates to their habitat or they should be able to build their own box and describe why they added each item. Your assignment build a virtual habitat box. How can you create a similar activity without a physical box full of objects? You can do this in a Word document or Power Point presentation or go as far as making a web site or a web quest. Your goal is to individually create an authentic assessment/activity to help students explore the components of your assigned habitat. You can an example project, see photos of our habitat box and see samples of what can be included in the class resource space.
Your habitat box should include: biotic elements, abiotic elements, positive human use of the habitat, negative human use of the habitat (both could involve a cultural group). There should also be a relationship between two items within the box (predator/prey, pollinator/flower, etc.).

P-2 Adaptation Journal
Your assignment this week is to take a couple of adaptation walks in your neighborhood or a park nearby where you live. I want you to keep a journal of the plants and animals you see and describe some of the adaptations you notice. Relate the structure of the organism to what it does in its habitat. Try to journal on the topic every day for at least 10-15 minutes even if you don't take a walk that day. Then compile your notes and write a one- page summary of the experience including some of the highlighted adaptations you noticed during your walks. Were you looking at your familiar surrounding differently? Did you notice things you hadn't seen before? How can journaling be used to study the environment in your classroom. Preferably, you will have a digital camera and be able to share images of what you saw, or a scanner to scan in any drawings you make. If not you'll have to rely on your written word to describe what you see.
You should turn in a one page summary of your journal plus any images you took.

P-3 Wetlands Lesson
The current focus of education on math and literacy and left many elementary school teachers with little time to focus on science. This week work in groups to design and describe how some of the topics covered in the Wetlands module could be covered during a literacy or math lesson.
*You should turn in an original math or literacy based lesson plan that utilized wetlands. It should be a minimum of 2 pages and can take any format you desire. Make sure to include how it could fit into what you teach and specific details of what you would do in the classroom. *Each group member must send an email to the instructor detailing their contribution to the group project in order to receive full credit for this assignment.*

P-F Final Project
Create an innovative lesson or unit that covers one of the topics covered in this course. This project will allow you and your team to create a pedagogical approach that encourages students to learn scientific content while stimulating them to create personal connections with the material covered. The project should also take into account teachers limited time and be relevant for use in elementary school. You can focus on material geared toward the student with a teachers guide or you can focus on the teacher with lesson ideas to be used with students. *This project may be done in groups or individually.*