

Internet2 Sample Project

Project Title: **Biodiversity and the evolutionary history of organisms.**

New York State Standards

Level: Intermediate (7-8)

New York State learning Standard: MST

Area: Science

Content Standard: Content (4)

Area of Study: Living Environment

Key Idea 3: Individual organisms and species change over time.

Performance Indicator MST4.1.LE3A

Students describe sources of variation in organisms and their structures and relate the variations to survival.

Key Idea 6: Plants and animals depend on each other and their physical environment.

Performance Indicator

Students describe how plants and animals, including humans, depend upon each other and the nonliving environment.

Students describe the relationship of the sun as an energy source for living and nonliving cycles.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

Performance Indicator

Students identify ways in which humans have changed their environment and the effects of those changes.

Level: Commencement (9th, Living Environment)

New York State learning Standard: MST

Area: Science

Content Standard: Content (4)

Area of Study: Living Environment

Key Idea 3: Individual organisms and species change over time.

Major Understandings 3.1f

Species evolve over time. Evolution is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, and (4) the ensuing selection by the environment of those offspring better able to survive and leave offspring. Major Understandings

Key Idea 6: Plants and animals depend on each other and their physical environment.

Major Understandings 6.3a

The interrelationships and interdependencies of organisms affect the development of stable ecosystems.

Key Idea 7: Human decisions and activities have had a profound impact on the physical and living environment.

Major Understandings 7.1c

Human beings are part of the Earth's ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems. Humans modify ecosystems as a result of population growth, consumption, and technology. Human destruction of habitats through direct harvesting, pollution, atmospheric changes, and other factors is threatening current global stability, and if not addressed, ecosystems may be irreversibly affected.

National Standards

Level: Intermediate (7-8)

Area: Science

Content Standard: C

POPULATIONS AND ECOSYSTEMS

- A population consists of all individuals of a species that occur together at a given place and time. All populations living together and the physical factors with which they interact compose an ecosystem.
- Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some micro-organisms are producers--they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food. Food webs identify the relationships among producers, consumers, and decomposers in an ecosystem.

Level: Intermediate (9-12)

Area: Science

Content Standard: C

THE INTERDEPENDENCE OF ORGANISMS

- Organisms both cooperate and compete in ecosystems. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.
- Living organisms have the capacity to produce populations of infinite size, but environments and resources are finite. This fundamental tension has profound effects on the interactions between organisms.
- Human beings live within the world's ecosystems. Increasingly, humans modify ecosystems as a result of population growth, technology, and consumption. Human destruction of habitats through direct harvesting, pollution, atmospheric changes, and other factors is threatening current global stability, and if not addressed, ecosystems will be irreversibly affected.

PURPOSE

To assess students' ability to define key components of a community, understand the interrelationships found in a community, and to value communities that are part of their everyday lives.

GOALS

Students will be...

- Identify an organism that is missing from the phylogenetic tree on Tolweb.org;
- Compile and analyze research conducted using Internet2 resources;
- Contribute to the Tolweb.org website by authoring a page;
- Present the learning products at the Global Summit.

ENDURING UNDERSTANDING

- Communities serve many different functions in students' everyday lives.
- Students have an interconnection with the environment, and their actions affect and shape the community.
- Human decisions have a profound impact on the physical and living environment.

ESSENTIAL QUESTION

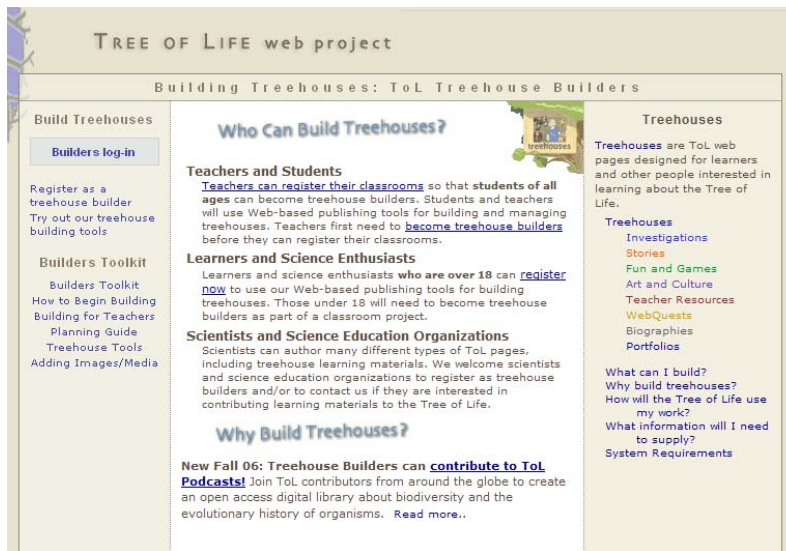
- How do living things change over time to become a new species?
- How do living things and non-living things interact in an environment?
- How are humans dependent on their communities?
- What decisions or activities have had a profound impact on the community?

Summary of the Project:

The Tree of Life Web Project (www.tolweb.org) is based on the scientific inquiry process that provides students with an opportunity to build on their prior knowledge, reflect on their practice as young scientists, and publish their results. This will allow students to forge connections between science, literacy and technology learning. Through the creation of their own online page, the final product promotes student writing and scientific inquiry, as well as cultivates students' technology skills using media and online resources.

During the Project Integration in the classroom, students will be able to complete the following learning tasks:

- 1) **INTRODUCTORY ACTIVITY:** Creating your family tree **SHOW & TELL**
- 2) **BUILDING BACKGROUND KNOWLEDGE:** Learning about the Tree of Life - science content in class (could use videos resources, etc.) & rainforest/deforestation/etc.
- 3) **STUDENT LEARNING PROJECTS:** Students will create/contribute to a page on the Tree of Life site that will be published online. Students could be assigned or choose organisms that have not yet been included on the Tree of Life website.



4) ADDITIONAL PROJECTS/EXTENSION ACTIVITIES:

- create an online virtual poster (Gloster EDU)
- create a commercial (could be a multicast on the NYSERNet network to promote Global Summit)

5) **GLOBAL SUMMIT PRESENTATION:** Students will present on new species and the impact of human decisions and activities on different communities at the global summit.

During the Global Summit, students should also be able to discuss and present basic information about the Tree of Life Biology Project, including:

- How you can browse the ToL to learn about biodiversity using the ToL website
- How you can find information and media on a specific organism.
- How teachers and learners can contribute pages to the ToL.
- A quick demonstration of how to use the ToL Treehouse Editor.
- What phylogeny is and how you can use the ToL to learn about Phylogeny.