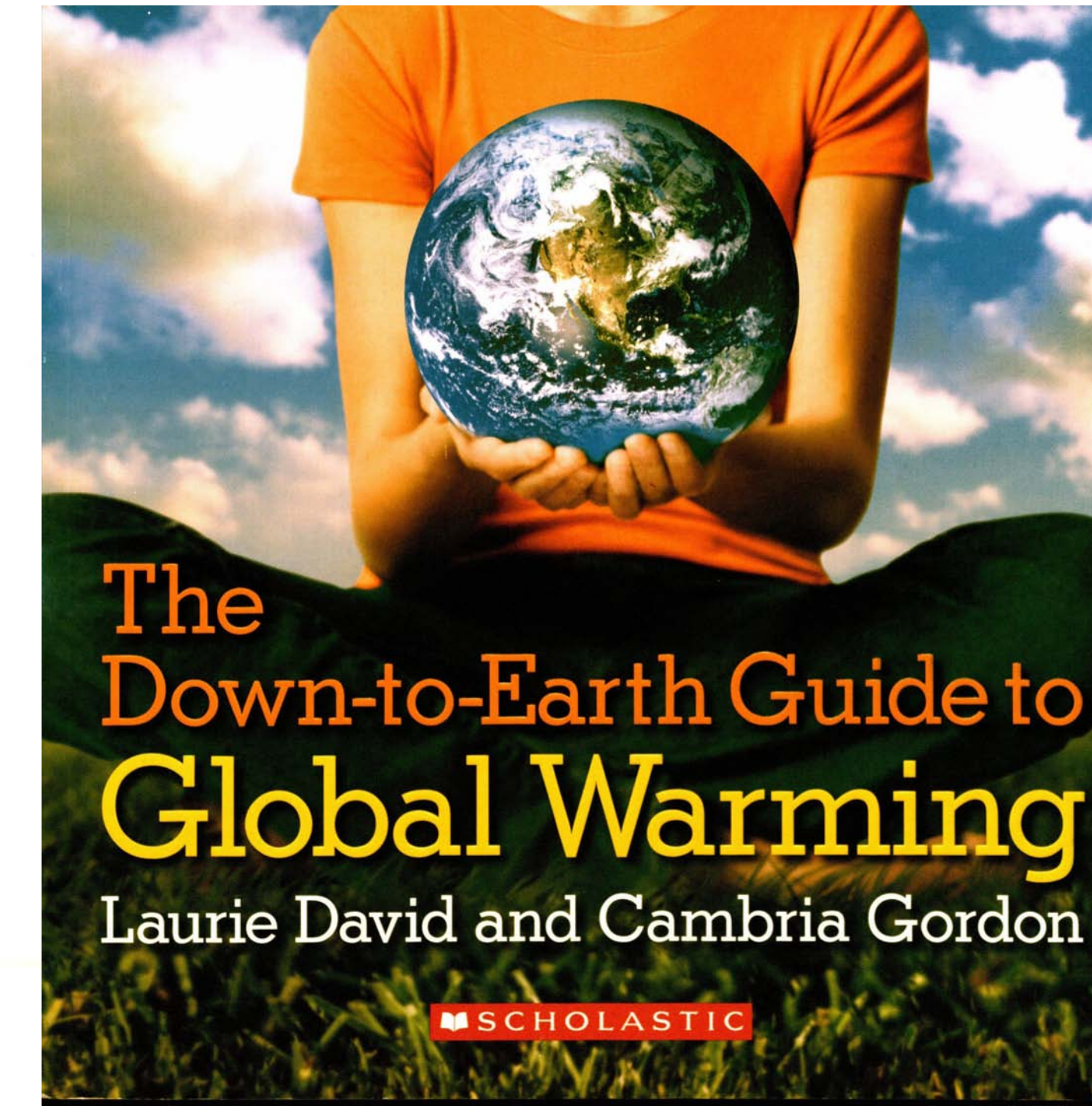


Environment + Ethics + Upward Bound + KSU = CHANGE



Science is a process. Science is a method of learning more about the world. Science constantly changes the way we understand the world.

Environmental problems have a cultural and social context. Understanding the role of cultural, social and economic factors is vital to the development of solutions.

Environmental science is an expression encompassing the wide range of scientific disciplines that need to be brought together to understand and manage the natural environment and the many interactions among physical, chemical, and biological components.

This Upward Bound, Non-bridge course is a five-week summer laboratory experience with classroom assignments, games, internet search, video, projects, field trips, and community service endeavors. The goal of the course is to provide students with the scientific principles, concepts, and methodologies required to:

- understand the interrelationships of the natural world
- identify and analyze environmental problems (natural and man-made)
- evaluate the relative risks associated with these problems, and
- examine alternative solutions for resolving and/or preventing them.

At the end of the course, students should know characteristics of biomes vs. eco-systems; plants and animals, climate vs. weather; biodiversity; recycling/composting process; and sustainable strategies.



Week One: "Learn about biomes"

To understand a biome, students needed to understand about climate of the region; where each biome is found and what it's geography is like; the special adaptations of the vegetation; and types of animals found in the biome and their physical and behavioral adaptations to their environment.

Taiga
Taiga is the largest of the land biomes and is also known as a Boreal Forest. It consists of a continuous belt of coniferous trees found in areas across North America and Eurasia. Because this type of forest covers much of Russia, it is known by the Russian name Taiga.

Plants Animals Climate

Grassland
Grasslands are found around the globe and serve as grazing land for many animals. They are mostly unaltered areas where grasses are the main type of plant life. Grasslands are divided into three types: prairie, steppe, and savanna.

Prairie Steppe Savanna

Desert
Deserts cover about one-fifth of the earth's surface and are areas that receive extremely low amounts of rainfall. They are categorized as arid deserts, semi-arid deserts, coastal deserts, and cold deserts.

Arid Semi-Arid Coastal Cold

Deciduous Forest
Deciduous Forests are found in areas with more temperate climates that have shorter, milder, winter seasons. In addition to evergreens, these forests contain trees that shed their leaves in winter. Deciduous forests consist of five different levels: large tree, small tree, shrub, herb, and ground.

Forest Levels Plant Examples Animal Examples

Freshwater
The Freshwater Biome is defined as a water region with only small traces of salt, usually less than 1%. It is divided into three different types: rivers and streams, ponds and lakes, and wetlands.

Rivers and Streams Ponds and Lakes Wetlands

Marine
The Marine Biome, the largest biome in the world, is comprised of saltwater oceans and estuaries. It covers three-fourths of the earth's surface. It contains many species of fish and animals and provides the world with vast amounts of food.

Animals Plants Climate

Week Two: "Eco-posters (Eco-systems and Climate)"

A biome is a large geographical area of distinctive plants and animal groups, which are adapted to that particular environment. Each biome consists of many ecosystems whose communities have adapted to the small differences in climate and environment inside the biome.

Wetlands
Wetlands have been described as a "biotic pump" that can store and release carbon. They are also a source of many important ecosystem services, including water purification, flood protection, and habitat for many species of plants and animals.

Plants Animals

DESERT
Deserts are dry, arid regions with low rainfall. They are found in many parts of the world, including North America, Africa, and Australia. Deserts are home to many unique plants and animals adapted to the harsh environment.

Plants Animals

Exotic Fruit
Exotic fruits are fruits that are not native to a particular region. They are often introduced from other parts of the world and can be a great source of variety in our diets.

Plants Animals

Wetlands
Wetlands are areas where water is present at or near the surface of the soil for a significant part of the year. They are important for many reasons, including water purification, flood protection, and habitat for many species of plants and animals.

Plants Animals

Week Three: "Plants and Animals"

Students worked individually and in KSU Green Teams to produce posters, and potted plants/terrariums with Dr. Richard Mattson, who guided students through the design of their terrariums. Containers used for the projects were used jars, vases, bowls, and decanters from local thrift shops or Howies.

Students conducted stream velocity testing and stream quality control for organisms on the Konza Prairie. Teams measured water flow and collected water samples.



Week Four: "Environmental Ethics"

Since students ate their meals at Derby Food Center, the staff explained the progression of "food processing" and the level of waste associated with meals. Following the tour, students visited the Student Farm to see the cycle of food processing, ie. how food becomes compost and used to replant the food supply. Students planted alfalfa, beans, and greens.



Week Five: "Reduce, Reuse, and Recycle, Go Green Now!"

The waste we create has to be carefully controlled to be sure that it does not harm our environment and our health. Waste is anything discarded, rejected, surplused, abandoned, or otherwise released into the environment in a manner (or quantity) that could have an impact on that environment. Students were challenged to daily collect their waste in a recycle bin in their rooms provided by the university. Each week their items were recorded to determine the most effective recycler. They also tracked waste through the University Recycling Center and Howies. For four weeks, students sorted paper and bottles at the Center and explored the many different avenues waste takes after processing at Howies. Students also visited the Rain Garden at the International Student Center, green roof at Seaton Hall, and passive/active solar systems at KSU University for Man.



Week Six: "Cultural Change"

Projects (reused/redecorated liquor bottles from local bars and Howies; recycled jars, vases, and bowls from local thrift shops, designed as terrariums for students to maintain; and recycling competition) and public service at KSU Recycling Center have engaged students and their families to changed their recycling habits.

