

# Using Projects to Encourage Exploration of Animal Diversity and Educational Resources

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## Introduction

We use this project in a course that is specifically designed for pre-service elementary teachers, but the assignment itself and many of the materials used for it are appropriate for any introductory biology course.

Early childhood, elementary, and special education majors at Clemson University take a three-semester science sequence that includes one semester of Life Science. Since children are naturally curious about their surroundings and the organisms that live there, one mission of the life science course is to give these future teachers tools that will help them both stimulate and satisfy this curiosity. Each student in the Life Science course does an “animal project” for which he or she uses some of the profusion of resources that are available, including lavishly illustrated books, CD-ROMs, and web sites. We provide some of the materials and students locate others. Students choose their own animals to research from within broad categories such as nocturnal animals, egg-laying animals, parasitism, mimicry, and camouflage. Identifying a project animal thus requires some preliminary research, and students may not use an animal that has been the subject of a previous report.

As part of the project, the student writes a research report on the animal. Each student then adds his or her report to a database on our “Biokids” web site at <http://biology.clemson.edu:591/biokids/home.htm>. Our database now includes about 250 entries and is an ever-expanding resource that students can use when they are teaching. In addition, each student prepares a poster presenting his or her animal. Students are urged to make the poster interactive and engaging for children; many are uniquely creative. Afterward the posters are donated to local elementary schools and other places where they can be used for educational displays. This gives students an extra incentive since their work is potentially useful to many children and teachers.

The complete handout of instructions for students to follow is also available at the Biokids web site. The remainder of this article provides information that the instructor might find useful in implementing this type of project.

## Notes for the Instructor

### Sample Topics

Students are randomly assigned a topic and must identify an animal that fits in the category. This gives the students a starting point for choosing an animal.

#### **1. Hibernation or Migration (When the Going Gets Tough)**

Wouldn't you like to own a condo in Florida for winter retreats? Many people take advantage of warm climates when they retire. Others replace the heat pump and stick it out in cold states or countries. Describe an animal with an interesting method for over-wintering.

#### **2. Social Animals (Social Life)**

With soldiers, workers, kings, and queens, some animals have complex social structures. Is social life an advantage or disadvantage for the individuals and societies?

Describe an insect or animal with an interesting social organization. How do the individuals know what role to fill in the “society?”

**3. Endangered Animals (One Fish, Two Fish, Where are the Blue Fish?)**

What’s the big deal about losing a few species of animals here and there? Should we really worry about letting an animal go extinct? Describe the importance and ecological significance of one endangered animal. What is being done to protect the species?

**4. Farm Animals (EIEIO)**

Farming is a huge industry and is obviously important for sustaining life as we know it. What animal has the most interesting life on the farm or ranch? How has the farming process for this animal changed as the world has become industrialized and new technologies have been introduced?

**5. Egg Laying (Golden Egg)**

What’s the advantage of allowing eggs to develop outside the body? What are the disadvantages? What special characteristics of eggs make them able to support and protect a developing embryo? Choose an animal that lays either hard or soft-shelled eggs and discuss this interesting reproductive method.

**6. Nocturnal (Night Life)**

Are you a night owl? Take a walk at night and you may see more animals than during the day. Describe the life of an animal that sleeps during the day. Does the animal have any special adaptations to aid it in night living?

**7. Camouflage (Hide and Seek)**

As military personnel and hunters know, camouflage can provide a distinct advantage. People can wear colors that blend into their surroundings or stand out, but we aren’t the only ones that use coloring, costumes, and disguises to our advantage. Describe an animal that enjoys the privacy of a life in hiding.

**8. Defensive Measures (I’m Warning You)**

Explore the defensive strategies of an animal species. Consider sounds, movements, repellent or poisonous secretions, threatening postures, displays, and colors. What does the defensive measure accomplish?

**9. Communication (Are You Talking To Me?)**

Find an animal species with an interesting mode of communication such as sound, pheromones, or visual signals. Describe the reason for the communication and its effectiveness. Communication can be within a species or between species.

**10. Life Cycles (of an insect or amphibian)**

What insect or amphibian do you think has the most unique and interesting life cycle? Include information about the stages of the life cycles, parental care, life expectancy, and survival strategies.

### **11. Competition (This Land is My Land)**

All animals compete for resources to some degree. Find an animal that has developed an interesting strategy to compete actively for resources such as food, space, water, or mates. The competition described may be between species or within the same species.

### **12. Animals with shells (I want to be alone!)**

Many animals wear protective armor. You may think immediately of turtles, but consider mollusks as well. It's obvious why shells are useful, but do they have drawbacks as well?

## **Selected Resources**

### **CD-ROMs**

*Amazing Animals*. Dorling Kindersley. 1997. DK Multimedia 95 Madison Avenue, New York, NY 10016. 1-800-DKMM-575

*Amphibians and Reptiles*. Jr. Nature Guides. ICE Integrated Communications & Entertainment Inc. 1996.

*Birds*. Jr. Nature Guides. ICE Integrated Communications & Entertainment Inc. 1996.

*Complete Guide to Gardening*. Multicom Publishing, Inc. 1994. 1100 Olive Way Suite 1250, Seattle, Washington 98101.

*Coral Kingdom*. Digital Studios. 1995. 209 Santa Clara Avenue, Aptos, California 95003. 1-800-499-3322. 408-688-3158. [nolan@cyberlearn.com](mailto:nolan@cyberlearn.com). <http://www.cyberlearn.com>.

*The Digital Field Trip to the Wetlands*. Digital Frog International. Trillium Place, RR2, Puslinch, Ontario, NOB 2JO, Canada (519) 766-1097. [www.digitalfrog.com](http://www.digitalfrog.com) Copyright 1996.

*Encyclopedia of Nature*. Dorling Kindersley. 1995. DK Multimedia 95 Madison Avenue, New York, NY 10016. 1-800-DKMM-575.

*Insects*. Jr. Nature Guides. ICE Integrated Communications & Entertainment Inc. 1996.

*Learning About Insects*. Queue, Inc. 1995. 338 Commerce Drive, Fairfield, CT 06432 1-800-232-2224 or 203-335-0906.

*Multimedia Bugs*. Inroads Interactive. 1996 Glass Eye Software. 1050 Walnut Street, Suite 301, Boulder, CO 80302, 1-303-444-0632.

*North American Ecosystems*. Queue, Inc. 1995. 338 Commerce Drive, Fairfield, CT 06432 1-800-232-2224 or 203-335-0906.

*Virtual Reality Bird*. Dorling Kindersley. 1996. DK Multimedia 95 Madison Avenue, New York, NY 10016 1-800-DKMM-575

*Virtual Reality Cat*. Dorling Kindersley. 1996. DK Multimedia 95 Madison Avenue, New York, NY 10016 1-800-DKMM-575.

*Virtual Reality Dinosaur Hunter*. Dorling Kindersley. 1996. DK Multimedia 95 Madison Avenue, New York, NY 10016 1-800-DKMM-575.

*Wide World of Animals*. Creative Wonders™ ABC Electronic Arts. 1995.

*The World of Nature*. 1995 Queue, Inc and Joshua Morris. 338 Commerce Drive, Fairfield, CT 06432. 1-800-232-2224. 203-335-0906

## Volume 22: Mini Workshop

*Zootopia*. Lawrence Productions, 1800 South 35<sup>th</sup> Street, Galesburg, MI 49053-9687. 1-800-421-4157.

### **Books**

We make field guides available for students use. We also have many of the Eyewitness Books series by DK Publishing. Each book in this visually appealing series features a specific animal (for example, *Elephant*), a group of organisms (e.g. *Fish*, *Mammals*), or a habitat (e.g. *Seashore*, *Desert*) and includes interesting facts and beautiful photographs.

### **Web Sites**

The Biokids web site (<http://biology.clemson.edu:591/biokids/home.htm>) has links to dozens of useful sites.