Journeys: Walk on the Wild Side
Curriculum Resource
Grades 9-12

Overview

Students will explore the special relationship between humans and animals at the zoo. By visiting the Cincinnati Zoo & Botanical Garden and the zoo in Atlanta, students will experience the unique aspects of each zoo, helping them to better understand the larger context and purpose of zoos. Students will understand the role zoos play in fostering appreciation and wonder by exposing people to animals that may otherwise only be seen in the wild. Most importantly, the intent is that students will realize the role zoos play in conserving nature through education and research.

After visiting the zoos, students will participate in a live interaction with a Zoo Keeper at the Phoenix Zoo. The zoo keeper will provide a 'behind-the-scenes' perspective as well as answer students' questions.

Biography of Expert

Raquel Garnder is the Manager of Animal Experience at the Phoenix Zoo. She manages not only a team of specialists but also a diverse collection of over 200 exhibit and program animals including invertebrates, fish, reptiles, parrots, raptors, small mammals and primates! Raquel is instrumental in developing, managing, and implementing daily animal presentations for Zoo visitors. She loves sharing her knowledge of animals with students and adults. Her favorite animal is a walrus! She likes walruses because they are big, impressive, and have lots of personality. Her favorite walrus of all time was Olga at the Brookfield Zoo, once the oldest living walrus.

Raquel always enjoyed children and science and thought she would be a Pediatrician but she fell in love with zoo keeping during her college internship. As she says, "There was no looking back after that!" Before joining the Phoenix Zoo, Raquel interacted with visitors at the Arizona Science Center, encouraging scientific discovery through activities and demonstrations. Prior to that Raquel devoted her time to dolphins, pinnipeds, and birds at the Brookfield Zoo. Raquel's commitment to share her knowledge and experience with students and adults helps to promote the human-animal bond.

Learning Objectives

Topic: Excursion Location	Learning Objective(s)
Zoos: Cincinnati Zoo and Atlanta Zoo	Students will acquire knowledge of: • a number of different species and their natural habitats; • the role zoos play in conserving nature through education, research, and conducting scientific studies; • the role zoos play in fostering wonder and appreciation of wild and rare animals.

National Standards Addressed

The following are National Standards addressed through basic participation in the journey. Engagement and participation in additional pre- and post-activities (provided below) will expand the scope of standards addressed.

Grades 9-12
Science: National Academies of Science
▪ Life Science: students will develop an understanding of the interdependence of organisms, organization in living systems, and behavior of organisms.
Language Arts: National Council of Teachers of English
▪ Communication skills: students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes. Evaluating data: students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience. ▪ Developing research skills: students use a variety of technological and information resources (e.g., libraries, databases, computer networks, video) to gather and synthesize information and to create and communicate knowledge. ▪ Applying language skills: students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

Technology: National Educational Technology Standards

- Students use technology tools to enhance learning, increase productivity, and promote creativity.
- Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
- Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

Preparation for the Journey

To ensure the most meaningful learning experience for your students, it is recommended that students investigate the resources provided and engage in activities prior to the excursion. The video resources provide students with a context for the virtual excursion. The additional resources and activities offer opportunities for curricular connections and integration within your larger unit of study. The excursion is intended to complement a comprehensive unit. During the excursion, classes will be asked to share their response to the challenge question and the expert will provide feedback. It is recommended that your students decide as a class on *one* response to the challenge question.

Video Resources
Visit the Cincinnati Zoo to learn about the rare and interesting animals that live within the zoo's park by watching this educational and appealing video.
http://easylink.playstream.com/21_CenturyLearning/cities/cinn/Cinn_Zoo_256k.rm

Visit the Zoo in Atlanta and meet Lun Lun and Yang Yang, the popular resident pandas.
http://easylink.playstream.com/21_CenturyLearning/cities/atlanta/Zoo_Atlanta.rm

Learn about a Zoo keeper's job by watching this video. After watching it, you'll want to become a zoo keeper!
http://easylink.playstream.com/21_CenturyLearning/occupations/Zookeeper_k3.rm

Challenge Question
What is the rarest mammal in the world?

Answer: Sumatran Rhinoceros

Activities
The activities provided were developed by National Geographic. Given the wealth of links and resources included in the National Geographic Xpeditions website, brief summaries of the lessons are included in this Curriculum Resource with the web address listed for the complete lesson plan.

People and Endangered Species
This lesson provides students with an overview of some endangered species and of the ways that human activities contribute to species endangerment. When studying these topics, it is important to provide students with a sense of optimism and to help them figure out ways they can help protect species. Students will be asked to devise their own species protection plans.
http://www.nationalgeographic.com/xpeditions/lessons/08/g35/endangered.html

Can Captive Breeding Save Species?
When studying endangered and threatened species and habitats, students should become familiar with programs that strive to preserve biodiversity, such as captive-breeding programs and species-survival plans adopted by zoos, aquariums, and other institutions.

This lesson asks students to research and assess these programs.
http://www.nationalgeographic.com/xpeditions/lessons/08/g912/breeding.html

Animals versus People: Who's the better navigator?
This lesson asks students to focus on people's innate navigational abilities. They will first read about animal navigation and will then compare animal to human navigational capabilities. They will then create travel brochures for an Outward Bound-style company, providing customers with tips on how to find their way if they get lost and can't rely on their map and compass.
http://www.nationalgeographic.com/xpeditions/lessons/02/g912/animalpeople.html

Survival of the Fittest?
Crocodilians, including crocodiles and alligators, are ancient animals that survived the period of mass extinction at the Cretaceous/Tertiary boundary about 65 million years ago. While scientists are not sure why crocodilians are so hardy, they have plenty of evidence from modern and prehistoric crocodilians like SuperCroc *(Sarcosuchus imperator)* to develop hypotheses on this question. Students will investigate this evidence and write reports on their findings.
http://www.nationalgeographic.com/xpeditions/lessons/08/g912/crocssurvival.html

Resources

Background information on Excursion Sites
Cincinnati Zoo & Botanical Garden: http://www.cincyzoo.org
Prepare for our excursion by exploring the zoo's official website. Be sure to check out Emi, the rhinoceros, with the live webcam. Also, the 90 Second Naturalist audio clips provide brief and informative content on a number of different species.

Zoo Atlanta: http://www.zooatlanta.org/
Prepare for our excursion by exploring the zoo's official website. The Animal Explorers component features engaging, multi-media learning packages on gorillas and pandas, complete with a live Panda Cam.

Educational Resources
Active Science: http://www.activescience-gsk.com/home.cfm
This website offers a number of different interactive modules appropriate for a wide age range. Be sure to investigate the "Population Growth 1" module (ages 8+) and the "Population Growth 2" module (age 8+) that explore the affect food, water, and temperature has on organisms. There are also worksheets relating to the modules to download.

42Explore: http://42explore.com/
This website presents information on a variety of thematic topics, including organized lesson plans, activities, and resources. Developed by educators for educators and students, the website provides a consolidated database of educationally-sound lessons and resources. Be sure to explore the "Animal Homes" unit as well as the main index as there

are many explorations devoted to specific animals (i.e. bats). A new exploration is posted each week!

eSpecies Fact Sheets: http://www.kidsplanet.org/factsheets/map.html
This website offers fact sheets on over 50 species. Organized by geographic region, students will find general information about various species as well as their endangered status in the wild.

Infrared Zoo: http://coolcosmos.ipac.caltech.edu/image_galleries/ir_zoo/index.html
Through infrared images of zoo animals, students can visually understand the difference between warm and cold-blooded animals. These images taken with a thermal infrared camera allow students to draw interesting conclusions about animals. Specific lesson plans can be found at:
http://coolcosmos.ipac.caltech.edu/image_galleries/ir_zoo/lessons/index.html

Key terms
As these terms will be used throughout the journey, it is advised students understand their meaning before the excursion.

- Animal: 1) a living creature that is generally distinguished from plants by its cellular structure and by the ability to move voluntarily; 2) such a living creature other than a human, esp. a mammal.
- Mammal: any of the vertebrate animals that feed their babies with milk from the female mammary glands and usu. produce living young.
- Reptile: any of the class of vertebrate cold-blooded animals, including lizards, turtles, snakes, crocodiles, and the like, that breathe with lungs, are covered with scales or hard plates, and have short legs or none at all.
- Species: 1) in biology, the most fundamental classification of living things, comprising individuals that can breed with one another but not with those of other species; subdivision of a genus; 2) a variety, type, or kind of something; sort.
- Domestic: tame or domesticated
- Wild: occurring, growing, or living in a natural state; not domesticated, cultivated, or tamed
- Endangered: in danger of extinction
- Habitat: the area or environment where an organism or ecological community normally lives or occurs: *a marine habitat*
- Conservation: the protection, preservation, management, or restoration of wildlife and of natural resources
- Predator: an organism that lives by preying on other organisms

Questions for the Expert

Please forward any questions your students may have for the expert to Lia Woo at lia.woo@21-learn.com.

Further Investigation: ideas to enhance students' learning *after* the excursion

Reflection

RAFT Assignments: **R**ole, **A**udience, **F**ormat, **T**opic

RAFT assignments offer creative ways to engage students in reflective thinking and to build students' writing skills. Students take a specific 'role', write with a particular 'audience' in mind, following a certain format on an assigned topic. The following is an example that relates to the journey:

> **Grades 9-12**
> Role: Animal Rights activist
> Audience: Public
> Format: Newspaper article
> Topic: How zoos strengthen the human-animal bond

Service Learning

Turn your backyard into a wildlife habitat with the help of the National Wildlife Federation! In fact, once completed, you can apply for official certification! The website provides a number of support tools (i.e. planning and learning resources) to make this service-learning project engaging, educational, and beneficial to your local community!
http://www.nwf.org/backyardwildlifehabitat/createhabitat.cfm

Participate in FrogWatch USA by helping scientists conserve frogs and toads! The on-going project engages students in observing, collecting, and sharing information about frogs and toads to foster an appreciation for the species as well as an understanding of the importance of preserving wetland habitats.
http://www.nwf.org/frogwatchUSA/