

THE ART OF BIODIVERSITY

Through exploration of art at the NC Zoo, students will be inspired to create a biodiversity artwork of their own while making connections between diverse ecosystems, habitats and animals.

Grade Level
6-12

Theme:
Biodiversity
Ecosystems
Conservation

Curriculum Connections:
S, A

Materials:

- Biodiversity Note Cards
- Disposable or Digital Cameras

All life on Earth is part of one great, interdependent system. Living components interact with, and depend upon, the non-living components of the planet; atmosphere, oceans, freshwater, rocks and soils. Humans depend upon this community of life, of which we are an integral part.

Biodiversity Campaign Speeches

The first part of this lesson instructs students to help one another understand the three levels of biodiversity.

1) Divide the class into three groups. Each group will assemble into a campaign team to promote biodiversity. Teams should consist of advertising specialists, speech writers, and a “candidate” who will present a three-minute campaign speech to the class.

2) Assign each group a level of biodiversity (species, genetic, ecosystem) and give them the corresponding Biodiversity Note Card (pg 3.). Explain that the group should imagine that they have proposed a legislative bill to protect their assigned level of biodiversity. Their job is to assemble a three-minute campaign speech (complete with full advertising - slogans, posters, buttons, etc.) for a crowd of spectators to convince them to vote for the proposed legislative bill at an upcoming election.

3) Give the groups sufficient time to create their campaign advertisements and speeches and ask each group “candidate” to present speeches to the entire class. If you like, students can vote for the speech that was most convincing to see who “won” the campaign!

Art in the Park

Now that students have examined the three levels of biodiversity, explain that they will engage in an activity at the NC Zoo that focuses on either species or ecosystem biodiversity. On your next visit to the NC Zoo, divide your class into cooperative learning teams of 4-5 students and provide each team with either a disposable or digital camera.



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Explain that cooperative learning teams will utilize their camera to capture photos of some of the Zoo's public art. Each group will select a biome from the list below and focus on either species diversity - like the Sonora Desert or more general ecosystem diversity - like a desert biome). Once a topic is selected, students will search the Zoo for art that represents that theme and capture photos of those pieces.

Desert (may focus on Sonora Desert specifically)

Forest (Forest Glade, Kitera Forest, Forest Aviary, African Pavilion)

Grassland (North American Prairie, Watani Grasslands, Forest Edge, Lion)

Tundra (Rocky Coast)

Aquatic (Mountain Bog, Rocky Coast, Cypress Swamp, Streamside, Dragonfly Pointe—Constructed Wetland)

Back in the Classroom

Develop student pictures either in print form or upload them online. Students will integrate these photos into a larger piece of artwork symbolizing the topic of each group. They might design a poster, a sculpture, mural, or other type. The art should emphasize the connections between all creatures and the importance of biodiversity to that system. Each piece should in some way depict:

- The role of the animals and/or plants featured in the art
- The connections among the animals/plants featured
- Connections the animals/plants have to their unique habitat or ecosystem
- Reasons diversity is critical to the system (consider ecosystem services like water filtration, soil development, nutrient storage, pollution breakdown, climate stability, natural disaster buffers)
- Existing threats to the diversity and health of the system

Students might create a brief paragraph describing the art and it's significance. Allow teams to share their artwork with the classroom, demonstrating the symbolism and meaning behind each feature. Collaborate with colleagues to display student artwork around the school!



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Biodiversity Note Cards

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Species Diversity

Species diversity is a measure of the diversity within a defined *ecological community* that incorporates both richness of species (the number of species in a community) and the evenness of abundance of species. Typically, species diversity refers to the variety of species of plants and animals within a defined community (for example, a list of plant and animal species found within the Piedmont, or within a Brazilian rainforest). Systems are so tightly connected in ecological communities that species diversity preserves the balance of life within that region, so much so that even small changes to the diversity can cause ripple effects in a system.

Genetic Diversity

Genetic diversity is a measure of the total diversity of genes within a species of plant or animal, or within a particular population of a species. Diversity within a species allows for adaptations of that species. Problems such as interbreeding can occur when too few individuals of a species are available. Reduced genetic diversity often yields troublesome traits such as lethal genes or susceptibility to disease. Genetic variation is critical for long-term survival.

Ecosystem Diversity

An ecosystem is the result of all the biological, climatic, geological and chemical “ingredients” in a particular area. This total combination of factors gives rise to certain kinds of plant and animal communities whose needs can be met by interacting with all other parts of the system. The variety of plant and animal communities within a defined *geographic area*, such as a biome or eco-region is known as ecosystem diversity. Different from species diversity, ecosystem diversity looks at the sum of ecological communities that make up a broader biome or eco-region. These systems are so connected that damage to one community might have serious consequences for all others.