Skull Lab
Pre and Post Visit Materials

Kenosha
Public Museum
5500 1st Avenue
Kenosha, WI

Kenosha Public Museum

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Skull Lab

Skull Lab is an hour long museum experience designed for 5th to 8th grade. Through investigations and experiments students will determine the animal species through adaptations on skulls.

Program Goals:

- Students will work collaboratively to build critical thinking skills.
- Students will conduct experiments and investigations using real tools and scientific protocol.
- Students will understand animal adaptations and how they help animals survive.
- Students will engage in workshop generated conversations with teachers, other classmates and the facilitator.

Standards:
NGSS
DCI:
5th grade:

1.) LS2.A Interdependent Relationships in Ecosystems

Middle School:

- LS2.A Interdependent Relationships in Ecosystems
- LS2.B Cycle of Matter and Energy Transfer in Ecosystems

S&E Practices:

- Analyze and Interpret Data
- Engaging in Argument from Evidence
- Obtaining, Evaluating and Communicating Information

CCC:

- Patterns
- Cause and Effect
- Stability and Change

Wisconsin Science Standards by 8th grade:

- C.8.2 Identify data and locate sources of information including their own records to answer the questions being investigated
- C.8.4 Use inferences to help decide possible results of their investigations, use observations to check their inferences
- C.8.6 State what they have learned from investigations, relating their inferences to scientific knowledge and to data they have collected
- C.8.10 Discuss the importance of their results and implications of their work with peers, teachers, and other adults
- F.8.2 Show how organisms have adapted structures to match their functions, providing means of encouraging individual and group survival within specific environments
- F.8.8 Show through investigations how organisms both depend on and contribute to the balance or imbalance of populations and/or ecosystems, which in turn contribute to the total system of life on the planet

This packet of information will help prep your students for this program and allow for a debrief back in the classroom. Please go over information with your students, prior to the visit.

Key Vocabulary

Ecosystem: An ecosystem includes all living things and non-living things in a given area interacting with each other.

Food web: the energy links between living things. Usually starts with producers (plants) and followed by consumers.

Carnivore: Animals that only eat meat.

Herbivore: Animals that only eat plants.

Omnivore: Animals that eat both plants and animals.

Resources:

http://www.animalplanet.com/wild-animals/animal-adaptations/
Animal Planet, Top 10 Animal Adaptations

Kids National Geographic, Animals
http://kids.nationalgeographic.com/animals/

Pre Visit Activity

Ecosystem Food Web

Objective: Students will understand the role of a food web in an ecosystem and the changes to a food web if the ecosystem changes.

Materials:
- string
- index cards
- market

Set Up:
- Before the class, on each index card, put one of the follow: grass, leaves, berries, insects, fish, mice, rabbits, raccoon, owl, deer, foxes, coyotes
- Make enough cards for small groupings of your students

What you need to know:
Food webs are essential for ecosystems to survive. Food webs keep animal populations in balance to create a successful ecosystem for all to survive. There has to be predator and prey, along with herbivores, carnivores and omnivores for all the animals to survive. When the ecosystem food web changes, by either introduction to a new species, or taking one away animals needs to adapt to be able to survive. Some animals will move away if there food disappears, others might not make it. Basic food webs have plants and insects at the bottom, then larger predator animals at the top. Some examples might be grass-mice-owl or bugs-fish-fox-coyote.

Activity:

1.) Lay the cards out in front of your students groups. Ask them to create a food web using string to connect all the animals or plants, and give them only 2 minutes to finish it.

2.) After students have created a food web, ask students to share out their results. On the board write a food web so everyone can see.

3.) Tell the students they are going to have to rearrange their food webs after a change has happened in the ecosystem. Due to over-hunting, deer are no longer to be found in the ecosystem. Have students create a new food web without deer.

4.) Next give them another scenario: due to chemical treatment, the berries caused the mice to get sick and die out. Have students create a new food web without mice.

5.) Ask the students what happens to the animals who relied on those animals for their food? Would they be able to adapt to another food source? Could they move on to a different ecosystem? Why would a carnivore not be able to change their

diet to just plants? What would a herbivore not be able to change to include meat?

What's Going on Here?
Herbivore and carnivores have adapted to only be able to survive on plants or meat, respectively. Their teeth are designed to consumer food that is suited to their role in the ecosystem. A deer cannot go from eating berries, to eating a coyote. It does not have the teeth to allow for that to happen. When a problem occurs in an ecosystem, the animals and plants are all effected. Often times it does create a huge problem, where animals have to move out of the ecosystem or they do die off.

Extensions:

- Have students create their own food web from any ecosystem and write their own scenarios.
- Have students create a poster or PSA on how to stop humans from changing ecosystems and food webs.

Post Visit Activity

Create your Own Animal

Objectives: Students will create their own animal based on adaptations.

Materials:
- Several dice- template: https://www.firstpalette.com/tool_box/printables/cube.html
- paper
- pencil

Set Up:
- Create dice.
  Dice 1:
  - On 2 sides: carnivore
  - On 2 sides: omnivore
  - On 2 sides: herbivore

  Dice 2:
  - On 3 sides: Predator
  - One 3 sides: Prey

  Dice 3:
  - On 2 sides: Woods
  - One 2 sides: sand dunes
  - On two sides: Prairie

  Dice 4:
  - On 2 sides: Winter
  - On 2 sides: Spring
  - On 2 sides: Summer

What you need to know:
Animal adaptation allows animals to survive in their environment. By having simple adaptations like eye placement or teeth design, animals are able to hunt or protect themselves and eat what will allow them to survive in an environment. Animals adapt for all aspects of their environment, their coat gets thicker when its cold, baby animals often have camouflage to hid them, and prey species have excellent hearing.

Activity:

1.) Have students work independently to create their own animals. These animals will need to have adaptations to help the animals survive in their environment. Students will roll a dice to determine what environment their animal will live in, what season, what it will eat and if it’s a predator or prey.

2.) Students will create their animals by sketching it. They should keep in mind adaptations like eye placement, camouflage, size, sense of smell and hearing.

3.) Have students share out their animals and what adaptations they can used to ensure this animal will survive.

Extensions:

- Create a museum in your classroom with your new animals. Have students create labels explain how this animal lives.
- Try to make a food web with the new animals, would the ecosystems be successful or no?