What is animal behavior? The study of animal behavior is the scientific study of everything that animals do, whether the animals are single-celled organisms, invertebrates, fish, amphibians, reptiles, birds, humans, or other mammals.
**Animal Behavior**

*High School*

**Materials:**
- Copies of ethograms (depending on which one you’d like to use)
- Smartboard with internet connection or computer with internet connection and a projector
- AZA DVD, Methods for Animal Behavior Research: https://www.aza.org/methods-for-animal-behavior-research-dvd/
- Zebra Z-Grip Pens and Mechanical Pencils, and Zebra Sarasa Porous Pens
- Stopwatch
- Zebra Retractable StylusPen

**Background:**

What is animal behavior? The study of animal behavior is the scientific study of everything that animals do, whether the animals are single-celled organisms, invertebrates, fish, amphibians, reptiles, birds, humans, or other mammals. It involves the investigation of the relationship of animals to their physical environment as well as to other organisms, and includes topics such as how animals find and defend resources, avoid predators, choose mates and reproduce, and care for their young. Why do we study animal behavior?

- To better understand animals, for behavior is a source of knowledge and evidence.
- To improve animal conservation research in the wild. Zoo populations allow for access to animal behaviors not often witnessed in the wild. Field research is enhanced when inaccessible behaviors are gathered in zoos.
- To help scientists predict how human actions will affect animals and their environment in the future and to aid in wildlife conservation.
- Examples can be found at:
  - http://www.stlzoo.org/about/contact/pressroom/pressreleases/somali-wild-ass-births/
  - http://www.stlzoo.org/conservation/wildcare-institute/conservationinthehornofafrica/
  - savingthemountainnyala/ http://www.grevyszebratrust.org/citizen_science.html

Why is animal behavior important in a zoo?

- To improve animal husbandry in accredited zoos or aquariums.
- To improve animal research in the wild.
- To aid in wildlife conservation.

How do scientists study animal behavior?

- **Ethogram** - a list of behaviors performed by an animal species along with precise definitions and detailed descriptions of each behavior.
  - Ethograms are essential tools for scientists and students who want to study animal behavior and communicate their results to others.
  - Review the types of ethograms: Ad-libitum, All occurrences, Scan sampling, Focal animal, One/Zero
• In order to be a useful scientific tool for studying behavior, an ethogram must have clear and complete descriptions of behaviors.

• Anthropomorphism - assigning human qualities and characteristics to animals

You have to be careful when you are observing animals because you may want to assign the human qualities to them. Scientists can answer how and what an animal is doing, but it takes much research and long studies to find out why it does something.

Example: lying down vs. resting- lying down describes what the animal is doing, resting implies “why” the animal is doing it. Many animals lie down for reasons other than rest. Social animals may lie down as a sign of submission and prey or predator animals may lie down to hide from each other.

If you are doing the optional lesson expansion:

iPad(s) with “Observe to Learn” App downloaded
• Zebra Retractable StylusPen

1st Session:
• Introduce students to background information on Ethology aka, “Animal Behavior”
• In groups, have students research a zoo or conservation organization (like the Saint Louis Zoo or Grevy’s Zebra Trust) that is using animal behavior research to aid either in the care of the animal at the zoo or the survival of the species in the wild (or both!)
• Have students prepare a short presentation (2-5 minutes) about how the zoo or conservation organization they researched helps zoo or wild animal populations.

2nd Session:
• Have students deliver their short presentations about zoo/conservation organization animal behavior research
• Introduce/review the 5 different types of ethograms
• Hand out one type of ethogram (of your choice!) and show a practice video so your students can practice their observation skills.

3rd Session:
• Have the students complete the rest of the types of ethograms and practice videos.
• Discuss with your students what ethograms they thought were the most representative of the behaviors they witnessed and what challenges they think researchers would face in the wild.
• If possible: take your students to a place around the school grounds (or on a field trip) where they can observe wild animals (ducks, songbirds, small mammals, insects, etc) and, working in their presentation groups, complete the ethogram they think would be most appropriate for that animal or group of animals. If you have a class pet, they can also practice observations on a class pet.
Optional Extension Lesson:

• If you have iPads in your classroom, download the FREE Observe to Learn App onto the iPads – this app allows you to customize ethograms to certain species or groups of animals.
• Plan a field trip to your local AZA accredited zoo.
• Before your trip, have your students work in groups to research what animals the zoo has (using the zoo’s website) and pick a species they would like to observe.
• Once the students have done some preliminary research on their animal, have them create their ethogram in the Observe to Learn App
• During the field trip, have the students try their ethogram while observing their animals.
• Back at School: Discuss what worked and what didn’t and what the students would have done differently.

Types of Animal Behavior Studies

1. **Ad-libitum (“at liberty”) Data Sampling**: The researcher records the behaviors of individuals or groups, with little or no reference to specific, well-defined methods. This is a good method for initial observations and question formation for later research, but is limited in the quantity and quality of data produced.

2. **All Occurrences Data Sampling**: The researcher selects one or a few specific behavioral events and records every occurrence of that (those) behavior(s) within the animal group. This technique is especially useful in determining the rate, frequency, or synchrony of occurrence of specific behaviors.

3. **Scan Data Sampling**: The researcher records the instantaneous activity or behavioral state of all animals in the group at predetermined time intervals. It is impossible to record the behavior of all individuals instantaneously, but the researcher attempts to do so in as short a time as possible. The behaviors should be well-defined so that scanning is made easier. This method is useful for understanding the frequency with which all animals in the group display certain behaviors or behavioral states.

4. **Focal Animal Data Sampling**: The researcher selects an individual to be the primary focus of observation. The researcher records either 1) all behaviors of that individual or 2) all occurrences of specific behaviors of interest that the focal animals exhibit, during a set period of time. This technique is useful for providing data on specific behaviors and is more reproducible than ad-libitum sampling.

5. **One/Zero Data Sampling**: The researcher records whether or not a behavior occurs within a set time interval of observation. If the behavior occurred, it gets a score of 1. If it did not occur, it gets a score of 0.
1. **Ad-libitum (“at liberty”) Data Sampling** - The researcher records the behaviors of individuals or groups, with little or no reference to specific, well-defined methods. This is a good method for initial observations and questions formation for later research, but is limited in the quantity and quality of data produced.

Species:

Start Time: ___________________________  End Time: ___________________________

INSTRUCTIONS:
Record any behavior of one individual animal in the group for a specific time period.
2. **All Occurrences Data Sampling** - The researcher selects one or a few specific behavioral events and records every occurrence of that (those) behavior(s) within the animal group. This technique is especially useful in determining the rate, frequency, or synchrony of occurrence of specific behaviors.

Species:

Start Time: ______________________ End Time: ______________________

**INSTRUCTIONS:**
Record any behavior of one individual animal in the group for a specific time period.

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3. **Scan Data Sampling** - The researcher records the instantaneous activity or behavioral state of all animals in the group at predetermined time intervals. It is impossible to record the behavior of all individuals instantaneously, but the researcher attempts to do so in as short a time as possible. The behaviors should be well-defined so that scanning is made easier. This method is useful for understanding the frequency with which all animals in the group display certain behaviors or behavioral states.

Specie:

Start Time: __________________________ End Time: __________________________

INSTRUCTIONS:
Record behaviors of all the animals in the group at predetermined time intervals. Discuss the behaviors listed below so that the behavior is understood and agreed upon by the whole group. Make notes if you need to.

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<th>POSSIBLE BEHAVIORS</th>
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4. **Focal Animal Data Sampling** - The researcher selects an individual to be the primary focus of observation. The researcher records either 1) all behaviors of that individual or 2) all occurrences of specific behaviors of interest that the focal animals exhibit, during a set period of time. This technique is useful for providing data on specific behaviors and is more reproducible than ad-libitum sampling.

Species:

Start Time: ____________________________  End Time: ____________________________

**INSTRUCTIONS:**
Select one individual to be observed. Write down characteristics of your animal (or her name), so that you can identify it. Record all behaviors of that individual.

Identifying characteristics/Name: ____________________________________________

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<th>POSSIBLE BEHAVIORS</th>
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5. **One/Zero Data Sampling** - The researcher records whether or not a behavior occurred within a set time interval of observation. If the behavior occurred, it gets a score of 1. If it did not occur, it gets a score of 0.

Species:

Start Time: ___________________________   End Time: ___________________________

**INSTRUCTIONS:**
Score the occurrence (score of 1) or not occurrence (score of zero) per interval. Note that these behaviors might be simultaneous (tail flicking and doing call). Score both behaviors.

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