Environmental Science Institute
THE UNIVERSITY OF TEXAS AT AUSTIN

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How do animals know to do that?

Lesson plan for grades 3-5
Length of lesson: 50-60 minutes
Adapted by: Alexandra Murillo, Environmental Science Institute

SOURCES AND RESOURCES:

- "Awesome Animal Instinct!" (video) http://www.weather.com/video/awesome-animal-instinct-36116
- "Smart Cat doing tricks" (video) http://www.youtube.com/watch?v=nK3Vk7OWhqk
- Teacher resources for more information on behavior types:
  - "Evolution of Behavior." Brown University. (Inherited behavior) http://biomed.brown.edu/Courses/BIO48/16.Evol.Behavior.HTML
  - "Learned Behavior." RCN Boston. http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/L/LearnedBehavior.html
  - "Learned Behavior." Education Portal (with video) http://education-portal.com/academy/lesson/learned-behavior-imprinting-habituation-and-conditioning.html
  - "Behavior." Dr. David Swanson. (Learned vs. inherited behavior in regards to birds) http://sunburst.usd.edu/~dlswanso/ornith/lec16.html

POTENTIAL CONCEPTS TEKS ADDRESSED THROUGH THIS LESSON:

§112.14. Science, Grade 3: 10B
§112.15 Science, Grade 4: 10B
§112.16. Science, Grade 5: 10B

PERFORMANCE OBJECTIVES:

Students will be able to:

- Differentiate between learned and inherited behaviors graphically and orally.
- Demonstrate, orally, that animals have developed behaviors to help them survive in their specific environment.

MATERIALS (per group of 2-3):

- 1 computer with internet access
- 1 big sheet of paper (Large 30"x25" Easel Pad)
- Markers or other colorful writing utensils
- 1 worksheet per student to take notes

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- 1 post assessment (exit ticket) per student

CONCEPTS:

Animal behavior varies across the different domains of life. All organisms behave in ways that typically increase their evolutionary fitness and those behaviors are the result of thousands of years of adaptation. There are two main types of animal behavior: learned and inherited. Learned behavior is a behavior acquired by the organism during its lifetime. Learned behavior can occur via different means such as: habituation, sensitization, imprinting, and conditioning (Learned Behavior). Inherited behaviors are behaviors that have a genetic basis. These types of behaviors can be thought of as instinctual behaviors that were not learned by the organism (Evolution). See websites listed under "Resources" for more information on the differences between learned and inherited behaviors.

BACKGROUND:

This lesson was created based on a lecture over human mating strategies presented by psychology professor, Dr. David Buss at the University of Texas. Although the lesson does not explicitly deal with mating strategies, the lesson is more about what mating strategies are: a mix between learned and inherited behaviors.

The lesson will clarify the difference between learned and inherited behaviors by having students research animals of their choice and differentiate the two types of behavior. In the lecture, Dr. Buss spoke of some survival reasons that might be associated with mating strategies and this is incorporated in the lesson by having the students explain how the behaviors they researched lead to higher survival rates.

PREPARATION:

Make sure the computers used are capable of gaining easy Internet access. Have a list of animals prepared for the students to choose from, if the students will not be allowed to decide the animal completely for themselves. Make sure to have wall space set aside for the students to post their presentations.

ENGAGE:

Start the class by showing a clip of an animal doing something inherited and then show a clip of an animal doing something learned. The video titled "Awesome Animal Instinct!" can be shown as an example of an inherited behavior. The video titled "Smart Cat doing tricks" can be shown as an example of a learned behavior. The students should be told to remember what the animals are doing and think of ideas of how they know to do those things. They can either write them down or just remember.

After the clips have been shown, lead a discussion of what was seen in the videos. Ask the students questions, such as the ones listed below, to get them talking about what they saw in the videos. During the discussion, make a list of the students' responses to determine if the animal "knew" what to do on it's own or

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whether it "was taught" what to do by someone else. The responses can be listed on the board or projector and organized into two columns: the “Bird” video and the “Cat” video. This will help the students clarify their understanding of inherited and learned behaviors without explicitly telling them what they will be discussing for the day.

Ask: Questions pertaining to the Instinct video: What was going on in the clip? How did the birds and other animals act just before the tsunami hit? How do you think they knew there was something wrong? Questions pertaining to the Smart Cat video: What was the cat doing? How do you think it knew to do the tricks? Can any cat do those things? Etc.

Note to teachers: Other videos showing examples of the two can easily be found and used for the purpose of this lesson segment. Use the terminology the students use to answer the questions and/or define it and then use that definition in the remainder of the lesson.

EXPLORE:

The exploration section should be split up into different segments so as to have the students focus on each task and help them to not get overwhelmed at the idea of having to complete a large task.

For example:

- One segment can be the research portion (~10 minutes).
- The second segment can be the presentation preparation portion (~5-10 minutes).

1. Split the class into small groups of about 2-3 and either assign an animal or let students choose their own.
2. Let the students research the animal on the computer and ask them to focus on the animal’s behaviors.

Possible websites:

1. Links to information about different animals: http://www.kidsplanet.org/factsheets/map.html
2. Searchable website for more information on different animals (with large section on the animal’s behavior): http://animaldiversity.ummz.umich.edu
3. Website with many links to other possible research websites: http://www.kidfriendlysearch.com/Science.htm

3. Students will need to list a set amount of behaviors (teacher can decide), on a big sheet of paper, and determine if the behavior is learned or inherited and try to explain why they think that.

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4. Students can decide how they want to present the information. For example, if they want to present it just in a list, with pictures, a combination of the two, or any other means of presenting information.

5. Have the students hang up their posters on the wall.

6. (If time permits) Allow the students to research on the computers and have them focus on how/if those behaviors they included on their poster are necessary for the animal's survival.

7. Have them explain, in writing, if their assigned animal needs each specific behavior in order to survive the animal's environment. Students can add the information to their poster if they choose.

EXPLAIN :

If the class is small enough, each group can present their findings. Ask probing questions after each presentation if the students are not on the right track or if they didn't include enough information.

If the class is large, hand out the note-taking worksheet and have the students walk the room and take notes on everyone else's posters. After the gallery walk, have the class come back together and discuss what they noted.

Questions that can be asked to get the students thinking/talking:

- What was your animal?
- What was/were the behavior/behaviors you included in your presentation?
- How did you determine which behavior was an instinct (or term they used) or learned (or term they used)?
- If doing the extension:
    - Does the animal need that behavior to survive?
    - Why do you think the animal needs that behavior to survive? Or why not?
    - Could the animal survive if it didn't exhibit that behavior?

ELABORATE:

In order to get the students thinking more about the similarities among behaviors across species, have two different groups compare and contrast the behaviors of the animal they did their presentation on.

For example:

If one group chooses a dog and another group chooses a cat you can ask about the differences in tail movements and the meanings. Cats twitch their tails when they are excited or about to pounce and dogs wag their tails when they are happy.

To get them started you can ask:

- Are there any behaviors that both of your animals exhibit?
- Why do you think that is?
- Do they have completely different behaviors?
- Do you think one behavior is better than the other? Why or why not?

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They do not have to write their comparisons down, they can just discuss with each other. The teacher should circulate the room asking probing questions to keep the conversations going.

EVALUATE:

- Before the students take the exit ticket, have them explain what they learned from the lesson. Try to get the students to discuss the importance between learned and inherited traits.
- In order to check for understanding of the lesson have the students complete the "exit ticket."

Name: _____
Date: _____

Presentation Notes

What you need to take notes on:
1. Animal the group chose
2. Example of learned behavior
3. Example of inherited behavior
4. Anything else you thought was interesting

Group # : Change the # to reflect the number of groups in the class/Add more if needed).
1.
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2.
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Group # :
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Group # :

1. _____

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3. _____

4. _____

Group # :

1. _____

2. _____

3. _____

4. _____

Name: _____
Date: _____

Exit Ticket

1. What is an example of a learned behavior?
   A. A student reciting the alphabet
   B. A newborn baby knowing to breathe when it is born
   C. A dog performing a trick, such as sitting when told
   D. Both A and C are examples of a learned behavior

2. An example of an inherited trait could be known as:
   A. An instinct
   B. A feeling
   C. An urge
   D. All of the above

3. How could a behavior increase the survival of an animal? Give one example.

Name: _____
Date: _____

Exit Ticket

1. What is an example of a learned behavior?
   E. A student reciting the alphabet
   F. A newborn baby knowing to breathe when it is born
   G. A dog performing a trick, such as sitting when told
   H. Both A and C are examples of a learned behavior

2. An example of an inherited trait could be known as:
   E. An instinct
   F. A feeling
   G. An urge
   H. All of the above

3. How could a behavior increase the survival of an animal? Give one example.