

Twins-Comparing Behaviors: Instinct vs. Learned Behavior

Science Standard V:

Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.

Objective 1:

Using supporting evidence, show that traits are transferred from a parent organism to its offspring.

Intended Learning Outcomes:

1. Use Science Process and Thinking Skills
4. Communicate Effectively Using Science Language and Reasoning

Content Connections:

Language Arts VII-3; Math V-1; Health Education V-3

Science
Standard
V

Objective

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Connections

Background Information

The idea that some behaviors are actually inherited is a hard concept for students to grasp. It's easy when discussing barking dogs or purring cats, but when you try to tell them that some of their actions are instincts, they have a hard time discerning those from learned behaviors. Make a list of behaviors on the board with the help of the students. Then go back through the list with two symbols, one for instinctive and one for learned. See if the students can decide which behaviors are which. Most of the behaviors will probably have both symbols, because it is hard to tell which human behaviors are learned and which are instinct.

Once students are sufficiently perplexed, watch a video to demonstrate that some behaviors are truly genetically determined. Refer back to the class list of behaviors and see if students have a different opinion on some of the behaviors after watching the video. Have them make a list of their own behaviors for further investigation. For homework, students interview their parents to determine which behaviors that they, their parents, grandparents, aunts, uncles, cousins, etc. share by genes.

Invitation to Learn

Ask students to raise their hand if they have a pet. If they do, have them describe some funny things they do. As they tell their behaviors, ask them to decide if it is something their pet has learned (playing dead, rolling over, coming to their food dish at the sound of a rustling bag) or if it is something instinctive to their species (barking at cats, playing with their tails, pouncing). Tell them that these are obvious behaviors. You can tell if they are learned from their surroundings or if they would act that way no matter where they were. Sometimes it's not so easy to tell.

Instructional Procedures

Materials

- The Mystery of Twins* video
- Behavior Investigation Chart*
- My Conclusions* worksheet

1. Ask students to describe a behavior that they notice, or somebody else has noticed, that they do (they giggle a lot, they are very serious, quiet, surly, jolly, excitable etc.). If they can't come up with one, give them an example from your own plethora of behaviors (I am loud and like lots of people around me.). Ask them why they think they act that way. Why do you act the way you do? Let them think about this a little.
2. Begin a list of behaviors on the board. Tell students that you want at least one type of behavior from each of them. It doesn't have to be one of their own behaviors, but some kind of act/behavior they have seen, do themselves, or know of. Call on students one at a time, writing their suggestions on the board.
3. Tell the students that there are two ways that they get their actions and behaviors. First, and sometimes most obviously, their behaviors come from their environment. Their surroundings are the easiest place for them to attribute their actions. They will be the first ones to say, "Well, I'm pretty hyper, but my house is a fun and crazy place. We're all pretty quiet at my house because my dad likes the silence. I mess around with art supplies because there's nothing else to do at my house." They understand that there is something in their environment that has influenced them to be the way they are. If you ask them if they think they would act differently if they were raised in a different home, they will almost always say yes.
4. Give them a twist-ask if they might consider the idea that perhaps they play with art supplies because they are genetically (instinctively) inclined to do so. With a little investigation they might find a great grandfather who loved to paint. Their enjoyment of art might be instinctive, not just a matter of finding something to do in the family room. Have them stop and think

about their personalities. Is one of their parents like them in more ways than one? A quiet, passive personality can be learned and passed on through inherited traits.

5. Revisit the behavior list, using two distinct symbols to make instinctive and learned behaviors. See if the students can decide which behaviors are which. *Most of the behaviors will probably have both symbols*, because it is hard to tell which human behaviors are learned and which are instinctive.
6. Once they are sufficiently perplexed, watch parts of *The Mystery of Twins* video to demonstrate that some behaviors are truly genetically determined. The video has great examples of twins who were separated at birth, raised in different environments, yet share instinctive behaviors.
7. Refer back to the class list of behaviors and see if students have a different opinion about some of the behaviors after watching the video. Help them see that it is difficult to determine which behaviors are instinctive or learned, but that we definitely get our behaviors from both.
8. Have students complete the *Behavior Investigation* chart (p. 7-29). Complete the portion of the chart in the ME section during class. If they already know some behaviors they share with their parents, siblings or cousins, etc., they can fill those in, also. Students interview their parents and determine behaviors that they, their parents, grandparents, aunts, uncles, cousins, etc., share by genes. Parents are very helpful with this because they often recognize behaviors in their children that they know they have, and vice versa. They are able to help in finding similarities with aunts, uncles, and grandparents who the children might not know as well. Students complete the chart and share at least one discovered inherited behavior with the class.

Possible Extensions/Adaptations/Integration

Math

- Students create a new word as a class. Make it a weird funny word and give it a meaning. For a month, tell the students to use the word everyday at school, at home, at recess, etc. around all of their friends and family. Have them tell you when they hear someone outside the class use the word in natural speech. Keep a line graph in the class through the month of how often the students hear other people use their word. This is a great example of people subconsciously learning new words from the

environment around them. Analyze the graph at the end of the month. Use of the word should rise dramatically (as long as the students are using the word regularly).

Character Education

- Use the activity to talk about how our actions and the words we use can subconsciously be learned by those around us. With that, it shows how we can be changed by who we associate with. The words we use (foul language included) are often peppered with the words we hear regularly. Our actions reflect the actions of those we hang around. Therefore, we should surround ourselves with people we like and admire, so that we will reflect their likeable behaviors.

Writing Connections

- Following the discussion on the discoveries from the home assignment, have students complete the *My Conclusions* worksheet (p. 7-30). They should write at least two paragraphs. One paragraph should explain what an instinct is, and include at least one example from their research of a personal instinct they discovered in their family. The second paragraph should explain what a learned behavior is, and include at least one example of a behavior they do that they think came from their environment. Conclude with a third paragraph of their opinion of the nature vs. nurture theory. Do they think we get our behaviors mostly from our genes, or are they mostly learned? Responses should be interesting and very telling as to how much students understood of the overall concept.

ESL/Special Needs Students

- ELL students who are fairly new to the language have an easier time drawing pictures of things they like to do and of their behaviors. Students with special needs, depending on their abilities, benefit from drawing their behaviors as well. Other options would be to give them a simpler chart to complete with only a ME and a PARENTS side. They would only be comparing their behaviors with their parents, instead of multiple people.

Gifted Students

- Challenge students to look into their ancestry, interview grandparents about great or great-great grandparents and their behaviors. See if they can find an inherited behavior that has been passed on through more than two generations. Students who enjoy this can research more information on twins separated at birth and the studies that have been done about them.

- Students may enjoy conducting their own Learned Behavior Study by observing their family at home. Have them watch their siblings for actions that are similar to their parents. They should keep a log for a month and share their observations with their family for a good laugh, and the class as a fun reminder of the lesson.

Assessment Suggestions

- Give students a list of ten example behavior situations and have them tell if it is instinct or learned and WHY (in their opinion). You are not really looking for a "right" answer. Rather, can they support their answer with correct logic? Some behaviors should be obviously learned (The phone rings and I walk over and pick it up), some obviously instinctive (I jump when I am startled), and some that are a bit in between (I sing in the shower just like my mom).
- Give students example behaviors and reasons why those behaviors are in place and see if they can give them the correct label, INSTINCT or LEARNED BEHAVIOR (e.g., I am scared of spiders. When I was little my brother would throw big fake black ones on me. They should write LEARNED as their answer.).

Additional Resources

Web sites

A fun nature vs. nurture lesson called *Genetics*,
<http://www.Discoveryschool.com>

A great lesson on *Animal Instincts*, <http://www.Discoveryshool.com>
Genetics Education Center, <http://www.kumc.edu/gec/>

Games for kids to learn about genetics,
http://www.genetics.gsk.com/kids/index_kids/htm

Information on cloning, <http://www.bbc.co.uk/genes./index.shtml>

Video

The Mystery of Twins, (Unapix, available through Amazon.com);
ASIN: 1575238535

Family Connections

- Send a sealed letter home to the parents challenging them to try to change a simple behavior of their child subconsciously in one month. Without telling the students, have the parents choose a certain way they are going to answer the phone such as "Hello, Williamson Residence" or "Williamson's" or "Hello this is _____." Have them choose something distinctive and different than just "Hello." See if over a month of just listening to their parents answer the phone this way, the students will switch over to it subconsciously. At the end of the month, send a paper home for parents to complete about their participation and the results. Share in class.

NAME _____

BEHAVIOR INVESTIGATION CHART

ME	PARENTS	SIBLINGS	GRANDPARENTS	RELATIVES

My Conclusions

-----'s Conclusions

About Instincts vs. Learned Behaviors

What do you think about how you got your behaviors?

What was the most interesting thing you learned?

-----'s Conclusions

About Instincts vs. Learned Behaviors

What do you think about how you got your behaviors?

What was the most interesting thing you learned?
