



Cheetah Traits

Grade Level

Grade 3

Engage

This activity is designed to start your students in recognizing themselves as scientists and thinking critically about problem-solving. The goal is to teach concepts through discovery and to encourage using scientific thought processes. As with all lessons provided, please feel free to adapt them according to your students' abilities. You may find it more successful to lead activities and discussions as a whole group as opposed to having your students' work in small groups. Certain scientific vocabulary may or may not be appropriate for your students' level of understanding. Take these ideas, make them your own and your students will have a greater chance at success.

What inherited traits could give cheetahs an advantage or disadvantage of survival in the wild?

Explore

1. Begin by asking your students to share any information they have learned so far about how organisms inherit traits from their parents. Remind students that offspring resemble their parents because of these inherited traits. Share some photos and videos of animal parents and babies if possible.
2. Next explain to your students that they are going to explore how some offspring can differ slightly in their inherited traits, and sometimes these differences give individuals an advantage in surviving and/or reproducing.
3. Share the above research question with the class. Begin to complete the research plan as individuals, small groups, or together as a group. Tell your students that they will be completing an activity to help answer the research question.

Explain

4. Begin the activity by having all students stand. Pass out the "Cheetah Trait Cards". Each student should receive one card.
5. Explain to the class, that the goal of this activity is to understand how traits passed down from parents to offspring can give individuals an advantage or a disadvantage of surviving and/or reproducing.
6. Students should review their card to discover what traits they have as a male or female cheetah.
7. For this activity, students will need to determine if their "cheetah" is well suited to reproduce and pass down their traits to offspring. Students will need to look at each trait on their card,

listen to the presented prompt, and decide if their cheetah is a good candidate for reproducing offspring that will survive in the wild.

Expand

8. Read each of the provided prompt aloud to the two teams. After each prompt, students should determine if the traits represented on their cards, if passed down, would give an advantage or disadvantage of surviving and/or reproducing. If a student believes the traits from their card/cheetah would give offspring an advantage in survival and/or reproduction, they should remain standing. If a student believes the traits from their card/cheetah would give offspring a disadvantage in survival and/or reproduction, they should sit down.
9. After reading each prompt below, ask students what made them decide to sit down or stay standing. Provide support and direction if needed to ensure all students understand the concept of the activity.
10. Prompts:
 - a. Cheetahs are known for speed. Their slender body and long legs give them the ability to run at top speed, faster than any other big cat. Cheetahs with shorter than normal legs, or uneven leg length have a difficult time running as fast as other cheetahs. Sometimes this causes them to miss out on opportunities to hunt and catch prey.
 - b. Cheetahs are equipped with a flat flexible tail that allows them to make quick turns on the run when hunting prey. Scientists have discovered that some cheetahs have developed a kink or a bend in their tail. A bent tail is not as aerodynamic as a flat tail. Some cheetah with this trait have a difficult time hunting and catching prey, as they can't keep up with quick turns and direction changes while running at high speeds.
 - c. Cheetahs have large lungs that allow for increased oxygen intake when they are running at top speed. Cheetahs with smaller than usual lungs do not have the stamina to chase and catch prey, which could lead to starvation and the inability to feed their young.
 - d. A cheetah's coat is covered in spots that serve as camouflage. Dark spots all over their body blend in with shadows in the tall grasses where they live and hunt. Just like human fingerprints, each cheetah has a unique spot pattern. This can vary in color and amount and size of spots. Some cheetahs are born with little to no spots. Without a strong spotted coat, cheetahs are not able to blend in and hide to ambush prey. This could lead to missed opportunities for food and possible attacks from other larger predators.

Assess

11. After all prompts have been read, discuss the potential outcomes with your students. Who is sitting and why? Who is left standing? Why did they choose to sit or stay standing based on the traits on their cards and prompts? If there are 2 or more students left standing, explain how this could be a breeding pair passing down the best traits for survival.
12. Continue the discussion by asking other questions about inherited traits: What inherited traits could give an individual an advantage in surviving? Which traits could give an individual a disadvantage of survival if passed down? What could this mean for the cheetah population?

Standards

Ohio Academic Content Standards
<p>Grade 3 Life Science Topic: Behavior, Growth and Changes</p> <p>Individuals of the same kind of organism differ in their inherited traits. These differences give some individuals an advantage in surviving and/or reproducing.</p>

<u>You are a cheetah with the following traits:</u> Normal leg length Flat tail Normal lungs Spotted coat	<u>You are a cheetah with the following traits:</u> Short leg length Flat tail Normal lungs Spotted coat
<u>You are a cheetah with the following traits:</u> Normal leg length Bent tail Normal lungs Spotted coat	<u>You are a cheetah with the following traits:</u> Normal leg length Flat tail Small lungs Spotted coat
<u>You are a cheetah with the following traits:</u> Short leg length Flat tail Small lungs Spotted coat	<u>You are a cheetah with the following traits:</u> Normal leg length Flat tail Normal lungs Solid coat, no spots
<u>You are a cheetah with the following traits:</u> Normal leg length Bent tail Small lungs Spotted coat	<u>You are a cheetah with the following traits:</u> Normal leg length Flat tail Small lungs Spotted coat
<u>You are a cheetah with the following traits:</u> Normal leg length Flat tail Normal lungs Solid coat, no spots	<u>You are a cheetah with the following traits:</u> Short leg length Flat tail Normal lungs Spotted coat

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Supplemental Materials

My Research Plan

What inherited traits could give cheetahs an advantage or a disadvantage of survival in the wild?

**1. What is my research question?
Is it a good question?**



2. How can I get my information?



3. What will I do with this information?



4. How will I know I did my job well?

