mystery science

Grades K-5
Mini-Lesson: “Can dogs see color?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Jay. When I was a kid, I had a dog named Sasha. She used to love taking walks in the snow. She was so little, the piles of snow along the sidewalk were bigger than her. She jumped in one until her body disappeared, then jumped back out again. I often wondered what she must be seeing down there, bouncing in and out of her snowy world. Someone named Myah has a question about what dogs see. Let's call Myah now.

[Video Call]

- Hi, Jay.
- Hey, Myah.
- I have a question for you. Can dogs see color?
- That’s a great question.

Take a look at this. Someone put a camera on a dog's back. This video helps us see from a dog's point of view. But it's still not how a dog sees. Not exactly. The eyes and brain of a human are different from the eyes and brain of a dog. That means what we see through our eyes and what dogs see through their eyes is different. So what would it be like if we could truly see how a dog sees? For example, maybe you've heard people say that dogs don't see color. But even if that's true, that could mean so many different things. Do dogs see only in black and white, like an old movie? Do they see the world entirely in shades of purple? Well, check this out. This is a

video of someone walking down a street. I'll call this human vision. And this is the same video adjusted to look more like what we think a dog sees. We'll call this dog vision. Now, fair warning, the dog vision we're showing here isn't perfect. There are lots of different kinds of dogs and every dog is different. Still, these videos can help us get an idea of what it's like to see as a dog. Watch closely. From what you can see here, what's the same about how most dogs and humans see? What's different?

VIDEO 2

Every human is different, so every human sees differently. How you see this video might be different from the way the person next to you sees it. Depending on how your eyes and brains work, one thing that might have stood out is color. In the dog vision video, there's lots of blues and yellows, but not a lot of orange and red. Scientists think most dogs can't see the color red. To them, things like this red ball look grayish or green. But most humans—not all, but most—do see the color red. This difference has to do with a body part at the back of the eye. Let's take a look. At the back of our eyes, we have tiny parts that help us see color. Let's zoom in really close so we can see them. See these parts here that are kind of cone-shaped? These parts are called cones. Cones see color. Most people have three types of cones. Each kind of cone helps us see a different part of the rainbow. One helps us see mostly these shades over here, including red. One helps us see mostly these shades over here, including yellow and green. And one helps us see mostly these shades over here, including blue. Dogs have two kinds of cones. They have one that helps them see shades of blue, and one that helps them see shades of yellow. Dogs do not have a cone that helps them see shades of red. However, even though dogs can't see red, scientists think dogs may be able to see a color humans can't. This is the

range of colors most humans can see. But there are colors beyond this range. Like out here, where we see darkness on screen, this color here is called ultraviolet. Most human eyes have a layer that blocks ultraviolet, so we don't usually see this color. But dog eyes don't block ultraviolet. Scientists think that dogs might see ultraviolet using their blue cones, so we can imagine that dogs might see this color as a shade of blue. So, in summary, what humans see is not the same as what dogs see because our eyes and brains are different. Most humans have three kinds of cones, parts that help our eyes see color. Most dogs have two kinds of cones, which is why they can see blues and yellows but not shades of red. Dogs may also have the ability to see the ultraviolet color, a part of the rainbow most humans can't see. It might feel wild to imagine not being able to see the color red or being able to see ultraviolet. But that's what's so incredible about living things. We all see differently. Some animals can see colors that even humans can't. Some don't see much at all, but have strong senses of touch or smell or hearing. Every animal has a unique way of sensing, totally different from humans. And for that matter, not all humans experience the world alike. Our bodies have differences that impact the way we see and sense. We have so much to learn from all these different ways of sensing the world around us. If we only pay attention to our own point of view, we'll miss some cool stuff. That's all for this week's question. Thanks for asking, Myah.