mystery science

Grades K-5
Mini-Lesson: “Do animals dream?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Esther! My cat, Olive, loves to nap. Her favorite spot is anywhere with warm sunshine. But sometimes, she'll come into my office while I'm working, stretch out on her back, and fall into a deep sleep. She is out. If I accidentally make a loud noise, she stays asleep, but her paws wave around. It's almost like she's saying, hey. Quiet down. Someone named Peyton is curious about what happens when animals sleep. Let's give Peyton a call now.

[Video Call]

- Hi, Esther.
- Hi, Payton.
- I have a question for you. Do animals dream?
- That's a great question.

We know that people dream because we can share stories about our dreams. But unfortunately, we can't chat like that with animals, at least not yet. There are things I've seen animals do when they sleep that makes me wonder if they dream, like when Olive waves her paws. Or check out this dog. He's asleep, but see how his feet twitch? And now it looks like he's running. Could that be a sign that he's dreaming about running? Like a dream where he's chasing after a ball and his body is acting out what's happening in the dream. And watch this sleeping cat. She hissed so loud that it woke her up. Hissing is a cat's way of saying stay away. So maybe she dreamed

about something scary, like a vacuum cleaner. Olive hates those. Maybe you've seen pets do similar things while they sleep and wondered if that was a sign that they were dreaming. And you can probably think of lots of other animals that you know sleep too. How could you tell if those animals are dreaming?

VIDEO 2

This is a tricky question, especially since animals sleep in such different ways. How do you tell if a bat is dreaming or a turtle or a whale? Well, one idea scientists have is to observe what happens when animals sleep and compare that to what happens when people sleep, since we know for sure that people dream. Scientists are still figuring out exactly how to tell when a person is dreaming, but their best guess is that dreaming looks like this. Looks like a bunch of squigglies, right? But those squigglies show what's going on inside a person's brain. The lines come from an EEG, which is a machine that measures brain activity. It's kind of like how a heart monitor shows your heartbeat as a zigzag line. This person is wearing a cap with sensors that connect to the EEG. And when there's activity in the person's brain, like their brain is doing something, it shows up on the EEG as wavy lines. Sometimes when you sleep, the activity in your brain looks like big spread out waves. But other times, it's these short, fast waves all packaged together. They look a lot like the waves your brain makes when you're awake, when you're thinking and learning. So why is there fast activity in parts of your brain when you're just lying there, asleep? Scientists think it's because you're dreaming. If dreams happen when there's a lot of fast activity in people's brains, we can check if something similar happens when other animals sleep, like this cat. She's wearing EEG sensors like you saw before, so scientists can see what her brain activity looks like. Scientists found that when dogs and cats sleep, they also have moments where their brains have lots of fast activity, a lot like we do, which means

dogs and cats might dream like we do too. So Olive might really be dreaming when her paws twitch. Scientists have studied how lots of other animals sleep as well, but sometimes it's difficult to study all animals' brains. The animal might be really big or really small or live somewhere hard to reach. So scientists look for other signs that could show a lot of activity happening in a sleeping animal's brain. For instance, this is a jumping spider. It's hard to see here, but when it sleeps, parts of its eyes will make sudden quick movements. Sounds kinda weird, right? But your body does something similar when you sleep. Watch this person's eyes. Do you notice how they're moving? Scientists call that rapid eye movement or REM for short. REM happens during some of those times when there's lots of fast activity in your brain, times when dreaming is likely to happen. So if people wiggle their eyes when they dream, maybe jumping spiders wiggle their eyes when they dream too. Can you imagine what a spider's dreams might look like? Different animals experience the world in such different ways, and it makes sense their dreams would be just as different. I mean, think about what life would be like if you were a dog. You'd probably use your sense of smell to explore, and maybe you dream in smells too. So in summary, it's difficult to know if animals dream, but one way scientists are figuring this out is by comparing other animals with people. When people sleep, sometimes there's lots of fast activity in parts of our brains, and that's when dreaming likely happens. When some animals sleep, there are signs that their brains also get very active, a lot like ours do. So maybe they dream like we do too. That means cats, dogs, and even jumping spiders might dream, as well as chimps, mice, pigeons, bearded dragons, octopuses, and many others. But animal dreams would be very different from ours since they experience the world in such different ways. So while we can't say yes for sure, there's evidence that some animals do dream. And maybe someday, you'll find more clues that help us answer if animals dream. That's all for this week's question. Thanks, Peyton, for asking it.