Grades K-5
Mini-Lesson: “Do scientists change their minds?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Esther! What's something you've changed your mind about? I sometimes change my mind about where to plant things in my garden. When something isn't thriving, I try to figure out what it needs and pick a better spot. Someone named Charlie has a question about changing our minds. Let's give Charlie a call now.

[Video Call]

- Hi, Esther.
- Hey, Charlie.
- I have a question for you. Do scientists ever change their minds?
- That's a great question.

Sometimes it seems like scientists have all the answers, but I wanna tell you about a question scientists have been trying to answer for nearly two hundred years. Do birds have a sense of smell? Maybe you thought about this before. You might even be confident that you know the answer. But how do you know? There are probably other animals that you're sure have a sense of smell, like dogs. Maybe you've noticed the way dogs sniff each other when they meet. Or you've seen a dog use its sense of smell to find a hidden treat or even to help people. Now, think about things you've noticed about birds. Maybe you've noticed things about how birds look

or things birds do. Based on what you've noticed about birds, what do you think? Do birds have a sense of smell?

VIDEO 2

I'm not sure how you answered, but one scientist who was curious about whether birds can smell had been noticing turkey vultures. They're a kind of bird that likes to eat rotten things. You probably know that rotten things can get pretty smelly, and the scientists noticed that too. So he came up with an experiment that is similar to a dog sniffing out a tree. He put out food that was rotten and super smelly, but he hid it where the vultures could not see. In another test, he put out fake food. He laid it in the open where the vultures could see, but because it was fake, it did not have a strong smell. Then he watched to see what the vultures would do. In the test with the smelly but hidden food, no vultures came to find it. But one vulture did come to peck at the fake food it could see. It seemed like these vultures used their sight to find food and not their sense of smell. The scientists thought he had the answer. These birds can't smell, or maybe they can only smell a tiny bit. And for a long time, that's what many scientists thought. But wait, years later, another scientist was studying turkey vultures and noticed they prefer food that's less rotten, which made him wonder, maybe the vultures did smell the hidden food, but ignored it because it was too rotten to eat. So he decided to repeat the experiment with a change. Instead of hiding really rotten food, he hid food that was less rotten and just a bit smelly. And guess what happened? The turkey vultures found the hidden food again and again. Unlike the first experiment, this time it looked like turkey vultures do have a sense of smell. But wait, these experiments only include one kind of bird. What about all the other birds? Can they smell? Another scientist decided to do an experiment with seabirds that fly over the ocean hunting for fish and other food. She released smelly oils and gases from boats, and each time, seabirds

flock to her. She repeated her experiment on foggy days and at night when it might be harder for the birds to see, and they still found their way to the smell. It looked like these birds do have a sense of smell. Earlier, I asked whether you thought birds could smell. Now that you've seen some experiments that tried to figure this out, I'm curious if your mind has changed.

VIDEO 3

If you did change your mind, hey, that can be a good thing. Maybe you didn't have enough information before and you learned something new. Scientists do that too. Scientists use experiments to gather information about a question. Another word for that information is evidence. For instance, when vultures did not find the super smelly food, that was evidence that supported the answer, no, these birds do not have a sense of smell. But new evidence might point to other answers, like in the later experiments. That evidence supported the answer, yes, some birds do have a sense of smell. And scientists have gathered even more evidence about birds and smell. By looking at all kinds of evidence, most scientists have changed their minds. They agree that many birds do have a sense of smell. New evidence can also raise new questions, Like, do some birds have a better sense of smell than others? Are there smells some birds don't like? And if birds use smell to find food, can birds find other things by smell too? Who knows? Scientists may uncover new evidence that changes our thinking about birds again.
So in summary, sometimes scientists do change their minds based on evidence. Scientists gather evidence as they experiment and test out ideas. By considering new evidence, scientists can change their minds and come to a new understanding. When you learn new things, try new ways to solve problems, and see things from new points of view, your understanding of the world changes too. You might not notice that change every day, but the next time you learn

something new, ask yourself, what did I used to think about this? And what do I think now?

That's all for this week's question. Thanks, Charlie, for asking it.