Lesson: “Why are polar bears white?”

VIDEO TRANSCRIPT

EXPLORATION VIDEO 1

Hi, it's Doug! Last time, I was telling you about this little fellow right here. It's a chameleon. I was telling you that it's almost as if some animals, like chameleons, have superpowers. Watch again how amazing a chameleon is with its tongue. Whoa! We've seen how animals can have some amazing parts they use in order to find food, but there's a lot more to the life of an animal than just finding food. And so, if you look hard enough, you might notice some other abilities animals have that are kind of like superpowers. Like this one. There's an animal here. Do you see it? I'll give you a hint. It's a bird. I'll show you where it is in 3, 2, 1. Here it is. It's an owl. It has its eyes closed. Now, that took you a second to find it, didn't it? Owls aren't the only animal that can be hard to find. You want to try some more? Okay. See if you can spot the animal here.

EXPLORATION VIDEO 2

What did all these animals have in common? Well, look. Remember where they live? They all look like their habitat or the place where they live? See? Like the owl has feathers that are colored just like its habitat—the trees that it lives in. And the tiger has fur that's colored just like the leaves and the branches that it hides in. The branches even kind of look like stripes, just like the tiger has. So the tiger looks like the place where it lives. The katydid is green which is the same color as the leaves that it lives on. And this frog has skin that's colored just like where it

lives, these brown leaves. There's a name for this—you might know it—when an animal looks a lot like where it lives. We say the animal is camouflaged. That's a big word and it's interesting. Say it slowly along with me. It's cam-ou-flage, camouflage. It's a word that comes from French. And it means to hide or disguise. When most people think of camouflage and animals, they think of this animal, the chameleon. Do you see it there? The reason people think of chameleons when they think of camouflage is because chameleons have something extra cool about them that they can do. Not only are chameleons camouflaged, but they can actually change their color. You see this one on the right? This is a sped-up video of a chameleon changing its color. Now, some people assume that chameleons can change to be any color they want to be and that's not quite true. Most chameleons can only change from being green to darker brown like this. But you can see that either way, chameleons are very good at being camouflaged or looking like where they live. Now maybe the most amazing animal at camouflaging is this—the octopus. The octopus really can almost look like anything it wants to. Watch what it does right here. Wow! Only very few animals can actually change their color the way this octopus or a chameleon can. Many animals can't change their color at all. They're just born camouflaged like this rabbit hiding in the grass. It's camouflaged. Its fur is brown which matches the color of the dead grass where it lives. But it's just born this way, it doesn't change its fur's color. Here's a different kind of rabbit. This is called the Arctic hare. It's a type of rabbit that lives in the far north. And you'll notice how it's born with fur that's as white as snow. So it matches where it lives. Or take a look at these. They're insects on a tree. Do you see them here? They're called moths which are very similar to butterflies. Here's another picture of camouflaged moths. They look just like the tree trunk that they're on. So many different kinds of animals are camouflaged. Their color matches the place they live and that makes them hard to see. But why? Why do you think this is? Why are so many animals camouflaged? Like, what do

you think would happen if these animals weren't camouflaged? Take these moths on the tree, what if they weren't brown? What if they were white or something instead? Now that they're not camouflaged, what do you think would happen to them?

ACTIVITY INTRODUCTION VIDEO

In today's activity, you're going to find paper moths that are hiding on a paper tree. These moths are right there in front of you, but they're camouflaged, so they're hard to see. Do you see any? I didn't think so. Just like real moths that hide on trees, your paper moths have a pattern on their wings that matches the different patterns on the trees in your room. After you find them, you're going to make your own camouflaged moth, and you can hide it in a place where the moth matches the background. While you're looking for moths, you can pretend you're a hungry bird like this one. Do you know what this bird eats? It eats moths, so you're not just looking for a moth. You're looking for a snack. Are you ready to try? Will you find a moth to snack on? I'll walk you through the activity, step by step.

ACTIVITY STEP 1

Get a handout and write your name on it. The picture shows you the moths to look for. When you're done with this step, click the arrow on the right.

ACTIVITY STEP 2

Follow these two rules when you hunt for moths. The first rule is, shhhhh! Don't tell anyone if you find a moth. And the second rule is, just look at the trees. Don't touch them or point at them. You don't want to give away where the moths are. Okay. Now that you know the rules, go to the next step.

ACTIVITY STEP 3

Ready? Pretend to be a hungry bird. Look for moths in the trees. When you're done, circle how many moths you found. Remember, don't show anyone where they are.

ACTIVITY STEP 4

Discuss.

ACTIVITY STEP 5

Discuss—look at the photo of the tree on the screen and at the trees in your room.

ACTIVITY STEP 6

Now that you've found some camouflaged moths, you're going to make your own camouflaged moth. Start by picking a place to hide your moth. You can't hide it in something. It has to be on something. Walk around the room. Where could your moth match the background? Maybe there's a poster around your room that you could hide your moth on, like this. Or maybe there's a bulletin board you want to hide it on, like this. Or maybe you want to hide your moth on one of the trees by making a moth that looks like this. Go ahead and pick a place in your room now. Use your imagination.

ACTIVITY STEP 7

Get your supplies. Get all the colors that match your moth's hiding place. If you're working alone, you can get extra color-a-moth sheets and hide a few moths, not just one.

ACTIVITY STEP 8

Now that you've chosen your spot, you need to figure out what colors are best for hiding your moth. Color a test square to match the spot you chose. Fold on the dotted line and check the match like this. If it doesn't match, it's okay, try again with a different crayon or marker, and then check the color again. Is that one better? But don't worry if it's not a perfect match. Close is often good enough. Look carefully at the colors of your hiding spot to see other ways to color your moth to match. To match the map, I'm adding some orange lines and some blue spots. Now it really looks great. This will be great camouflage for my moth.

ACTIVITY STEP 9

Unfold the paper and color your moth like your best test square. Color all the way to the edges of the moth.

ACTIVITY STEP 10

Now, you're going to cut out your moth. I'll show you a trick. First, fold your paper in half. Be careful. Make sure to line up the edges of your paper. Then, cut on line one until you reach the stop sign. Cut on line two until you reach the stop sign, too. When you unfold it, you have your moth.

ACTIVITY STEP 11

Get a sticky dot and put it on the back of your moth, like this. Then stick it to its hiding place.

ACTIVITY STEP 12

Now have someone look for the hidden moths. When you're done with this step, watch the next video.

EXPLORATION VIDEO 3

So now you've looked at how moths are camouflaged. But why are they camouflaged like this? How does camouflage help them to live their lives? Well, some hungry birds are predators, which means they eat other animals. And moths are their prey, which means they're the animal that gets eaten. Some birds eat moths. So moths being camouflaged is a great way to hide from their predator. That's why a lot of other animals are camouflaged too. Take this Arctic hare as another example. If you were this hare, you wouldn't just worry about finding food. You'll also have to worry about becoming food for another animal. There are lots of predators. Animals that would eat an Arctic hare if they had a chance. Animals like a fox, and a bear, and an owl. Animals that are eaten by other animals, prey animals, are often camouflaged because, by looking like where they live, that helps them hide from the animals that eat them. Camouflage helps prey animals hide from predators. But now, that's weird. Have a look at some of the Arctic hare's predators again. Do you see something these predators all have in common? Why, they're all camouflaged too? That's weird, though. Why would a predator, like a polar bear, be camouflaged? There are no other animals in the Arctic that would eat a polar bear. They're the biggest, most ferocious animal there is up there. Why is a polar bear white if it doesn't have any predators?

WRAP-UP VIDEO

So a polar bear doesn't have any predators. It doesn't have to hide from being eaten, because there's nothing that eats it. But that's not the only reason it might be helpful for an animal to hide. For a predator animal like a fox or a polar bear or an owl, it's great to be camouflage, too, not because they have to worry about being eaten, but instead, so that they can sneak up on their prey. Watch this Arctic fox, which has camouflage fur that's white as the snow around it. Watch how it sneaks up on its prey, in this case, a tiny mouse. Oh, and it's got it. Wow! So in summary, many animals look similar to where they live. We call that camouflage. A few animals can actually change their color, but most camouflaged animals are just born looking that way. Being camouflaged is helpful because, for a prey animal, camouflage helps them to hide, to try to not get eaten. But even many predator animals are camouflaged in order to hide from their prey, the animal they want to eat. That's helpful to them so that they can sneak up on their prey. Polar bears are a great example of this. This is why polar bears are white—so that they can sneak up on their prey. Go out and try to find some camouflaged animals near where you live. One trick is to hold very still and watch for movement in leaves and in trees. You might find one. Like here, do you see an animal? Watch for something moving. You see it right there? There's something moving. Oh, it's a camouflaged deer. Wow! Now, this is in the woods. But I live in a city, and even I can find some examples. I sometimes look at plants and leaves around my neighborhood. See anything moving here? There it is. It's an insect called a praying mantis. You can look on the ground, too, like in the grass or dead leaves. See anything here? Look for movement. Oh. Right there! It's a camouflaged toad. Animals that are really well camouflaged are the hardest ones to find because they look just like where they live. But if you use these tricks, you might have some luck. Have fun and stay curious!