Grades K-5
Mini-Lesson: “Is it possible to become invisible?”

VIDEO TRANSCRIPT

Hi, it's Doug! When I was growing up, one of my favorite all-time TV shows was a show called "Star Trek." It's a show about the future and I loved how it was full of inventions that don't exist in real life—at least not yet. This is one of my favorite ideas—it's called a cloaking device. Watch what it does. A cloaking device can make things like an entire spaceship, completely invisible. So cool! Someone named Brenin has a question about invisibility. Let's give Brenin a call now.

[Video Call]

- Hi, Doug!

- Hi, Brenin!

- I have a question for you. Is it impossible to be invisible?

- That's a great question.

People have imagined the idea of invisibility for a long time. Like the movie makers who gave Harry Potter his cloak of invisibility or Bilbo Baggins' magic ring in "The Hobbit." Even Lego Batman uses the power of invisibility to sneak up on bad guys. Being invisible would be so fun! Just think about it. You could play pranks on your friends. You could always win games of hide-and-seek. And you'd totally be able to surprise people at surprise birthday parties. Before I

say anything more, I'm curious: What fun things would you do if you could be invisible? Now would be a good time to pause the video and discuss.

Okay. You ready?

I wish I could hear all of your answers. You probably thought of lots of fun things you could do if you could make yourself invisible. I mean, just imagine being able to have the type of invisibility where someone standing right in front of you can't see you. That'd be pretty amazing. Like, imagine you could just press a button or put on a cloak and—puff—disappear. But what kind of technology could make that possible? Is there even such a thing? It seems like if there were, that would be a really hard thing to invent. One thing we can do, that's a lot easier is something more like this—we could use camouflage. This is more like a way of tricking someone or something into thinking that we're invisible. Like, look closely at how this wildlife photographer is dressed. You see how he's wearing white clothes to match the snow? Now, up close he's definitely not invisible like Harry Potter, but to animals who aren't paying close attention, he seems invisible because he's blending in with the snow around him. That's what camouflage is. It's looking like the background, the land, or the plants around you to blend in. It works really well. The animals he's trying to take pictures of won't even know he's there and wearing different colored clothes to look like the things around you isn't even the only way to seem invisible. You see these emperor penguins? They're scared of people. Like really scared. So when scientists in Antarctica wanted to study them, they could never get up close without sending them into a panic. Scientists would have loved to be invisible, but instead, they decided to trick the penguins into not seeing them. How? Meet the robopenguin! By using this robot to blend in scientists were able to sneak into this huge colony of penguins without ever being seen. And the pictures and videos they got were amazing. They even got videos of penguins laying

eggs. And it's not only humans who use camouflage to become invisible and sneak up on something. Animals use this trick, too. Check out this orchid mantis. Wait, where is it? Ah! There it is. An orchid mantis looks just like all the orchid flowers growing where it lives. Unless you look really closely, you can't even tell it's there. When a butterfly or moth lands nearby, the orchid mantis can sneak up and snatch it without ever being seen. Now, not all animals try to become invisible to sneak up on other hands. Some try to become invisible because they just want to be left alone. Like this cuddle fish, a relative of the octopus. Notice how its skin just changed? Cuttlefish are masters of invisibility tricks. Not only are they able to change the color of their skin to blend in where they're swimming, they can actually change the patterns on their skin. And that's not all - they can even change how bumpy their skin is. Like if they're swimming around bumpy rocks. Doesn't it look just like these rocks? Invisibility tricks like these work really well, but they're still just tricks that fool animals who aren't paying close attention.

So what about real invisibility? You know, like the kind of invisibility where you're standing right in front of someone and they can't see you? Is that kind of invisibility possible? Well, even though it is hard, scientists have made some interesting new discoveries and it all has to do with light. We're able to see things like toys and tables and books because light is shining on them. And when there's no light, you can't see them anymore. Part of what's so hard about making something invisible is that actual invisibility would mean light would be able to pass right through you. That may never be possible. But what if we invent something that stops light from shining on objects something that makes light go around them? Then, those objects would become invisible, right? Up until now, no one's figured out how to do this with everyday light. They've only been able to bend a special light in a lab and only on a pretty small level. But at least one inventor has figured out a trick that's kind of like getting light to bend around you. He invented

panels of material made of tiny lenses that bring in light from the left and right sides of an object. It's almost like camouflage, but using light. Watch this object disappear behind the material. It's pretty cool, right? Now, you can't really wear this material like an invisibility cloak yet. You would have to hold it up in front of you and stand really still. But it's the closest thing we might have to real invisibility.

So in summary, real invisibility like you see in the movies hasn't been invented yet, but we can use tricks like using camouflage or bending light with lenses to make ourselves blend in with our surroundings.

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