mystery science

Grades K-5
Mini-Lesson: “What would happen if you didn't have a skull?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Doug! Have you ever had an x-ray taken before? Maybe you've seen an x-ray of some of your teeth when you go to the dentist. Or if you're like me and you've broken a bone, you get an x-ray done and get a chance to see what part of your own skeleton looks like.

Well, someone named Kien has a question about this bone right here. Let's give him a call now.

[Video Call]
- Hi, Doug!
- Hi, Kien!
- I have a question for you. What would happen if we didn't have a skull?
- Ooh, that's a great question.

The skull—it might be the most recognizable bone of our skeleton. Technically, it's not even one bone, but lots of separate bones that fuse or join together while we're still babies. And of course, the skull is a symbol that lots of people use to stand for spookiness like you see on Halloween or a pirate flag, or as a symbol that stands for death and those who have died, like you see if you celebrate Dia de Muertos. While you might find it frightening or scary to think of things like that, keep in mind a skull is not just something that a dead skeleton has, each of us has a skull in our heads right now. As living, breathing, human beings you can even feel it, so there's a

positive happy side to skulls—all the great things a skull does for us. Can you think of some ways the skull is an important part of your body? There's more than one way.

VIDEO 2

One of the best ways to figure out what the skull does is to do a little thought experiment. Just think for a moment. What if you didn't have a skull? One thing you might've thought up right away is that there would be absolutely nothing to protect your brain. Your brain is one of the most important organs in your body; you could say the most important even. It controls every other part of your body. It's where you think and process all of the information that comes from your senses. Yet the brain is an incredibly soft, mushy part of your body. Having a skull acts like a natural helmet that protects your brain from getting bumped or damaged from everyday movements you might do. But that's not the only thing your skull does for you. Think about some of the other parts of your head. Your skull has these two round holes, almost like little caves, that hold and protect your eyes. On either side of the skull are two round holes that protect all the inner parts involved in your sense of hearing. And don't forget, your skull is home to your sense of smell, as well as your mouth. That includes your tongue and your sense of taste and your teeth for grinding and chewing up food. And that's not even including the fact that it's starting from these holes in your skull that you're able to take in the air you need to breathe, as well as food and water from here. But even this isn't everything your skull does for you. When we look at a picture of a skull, like this, where we're just seeing the bone, it's really easy to forget another important thing your skull does for you. But if we add in an illustration of what sits on top of the bone—the muscles that are in your face. Oh yeah! Without a skull, none of those muscles in your face would have anywhere to sit. In fact, all of them are attached to different parts of your skull. It's these muscles that allow you to open your jaw, raise your eyebrow, smile,

frown, or show someone anything you're feeling. So, while the skull might be a symbol of death and spookiness, the skull we each have in our head is pretty awesome and useful, and that's not just true for us either—lots of animals have skulls too. Any animal that has a skeleton has a skull. Birds have skulls, reptiles have skulls, fish, amphibians, and all the mammals too. All of these animals have brains. And just like us, their skull protects their brain. That's something that all of our skulls have in common. But the skulls of animals can look really different from one another. Some are long, like this one with a beak. Some are short with huge holes for the eyes. Some are gigantic with big tusks for teeth. Some are pointy and sharp. In fact, scientists can know exactly which animal a skull came from just by looking at it closely. Learning to do that can take years of practice. But even just a few simple observations of animal skulls can teach you some really interesting things. For example, check this out. Are the eye sockets facing forward on this skull or are they on the sides of the skull? That can tell you whether it's the skull of a predator animal like a mountain lion or the skull of a prey animal, like a deer, whose eyes are on the side of its head so that it can be on the lookout for animals that might want to hunt it. Or check out this skull. Can you guess what animal this one belongs to? Here's something especially weird about this skull. It's got a snout, but notice there are no holes at the end of the snout—there are no nostrils there. So, weird! Does this animal not have a nose? It does. Look instead on the top of its skull. Now, you see two holes there? That's its nostrils. It's the skull of a dolphin. You might've heard before that dolphins have a hole in the top of their head. It's their blowhole. Dolphins are mammals. They're not fish. They have to come up to the surface of the water to breathe. So do whales, too. A whale has a blowhole as well. By looking at the skull of a dolphin or a whale, you can discover that the blowhole is actually their nostrils. They don't have nostrils at the tip of their snout. Instead, their nostrils are on the top of their heads.

So in summary, a skull is an incredibly important part of the body, both for animals and for people. Without a skull, not only would you have no protection for your brain, but you'd also have no home for so many of your senses or for the muscles that control all of your facial expressions.

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