mystery science

Grades K-5
Mini-Lesson: “How do braces work?”

VIDEO TRANSCRIPT

VIDEO 1

Hey, it's Esther! I wanna show you something my dentist gave me. Check it out. It's a model of my teeth. It shows the exact spot of each tooth in my mouth. My dentist made the model so they could design mouthguards that would be a perfect fit for my teeth. Someone named Drew has a question about teeth. Let's give Drew a call now.

[Video Call]

- Hi, Esther!

- Hi, Drew!

- I have a question for you. How do braces work?

- That's a great question.

You know, I've never had braces but some of my friends wore braces like these. Do you see how there's a piece glued to each tooth and a wire that goes through all the pieces? A dentist put the braces on and then my friends wore them for months, sometimes years. A lot happens when people wear braces but it can be hard to see the changes right away because it's a slow process. Check out this video. It shows more than a year of wearing braces in just a few seconds. This way, we can see what happens really sped up. Ready? That's so cool. Let's see it again. Try watching these teeth all the way through and see what you notice. Here we go. Did

you see that? The teeth moved. Here they are at the start and at the end. They're in new spots. Now, you might wonder why a dentist would move someone's teeth. Well, think about the things we do with our teeth. We bite and chew. We brush and floss to keep them clean. We even use our teeth when we talk. Braces help some people do these things by moving teeth to new spots. For example, a dentist might move teeth so less food gets stuck between them or so teeth line up when a person chews. Okay, so braces move teeth. But when I watch that video, it isn't clear to me how the braces do that. I'm curious, how do you think braces move teeth?

VIDEO 2

So how do braces move teeth? Maybe you thought about how you move things. Let's say you need to move a big box that's in your way. It's way too heavy to pick up. What can you do? Maybe you try pulling on it or pushing on it. You keep pushing and pushing and slowly the box moves. It takes time and hard work, but inch by inch, you finally move it to a new spot. That's what braces do too. Braces push and pull on teeth. Remember that wire we saw, the one that connects across each tooth? That wire is gently pushing and pulling on teeth all the time. And over time, the teeth slowly move with the wire. But looking at that skinny wire makes me curious. Maybe it makes you curious too. Is that skinny wire really strong enough to move teeth? Teeth seem pretty stuck in place, and that's true. It would be hard to bite and chew if they weren't. We can even see how teeth are held in place. Maybe you've seen a picture like this before, it's an x-ray. It shows what's inside your body. Solid parts like teeth and bones show up white on an x-ray. Here is one whole tooth. Looks a little different, huh? This is the part you usually see and this part is actually inside your body. That part is called the root. It holds the tooth in place. Here's another whole tooth and another, each with its own roots. Maybe you notice these white areas around the roots. That part of the x-ray shows bone. Can you see how each root has its

own spot in the bone? Now wait, you probably know bones are hard. And these hard bones are really good at holding the roots in place. But if bone is holding the roots in place and the roots are holding the whole tooth in place, what's going on with braces? Braces have to move the whole tooth. How can braces move the whole tooth if bone is in the way? It almost sounds impossible. I mean, try feeling the bones in your shoulder. You can feel how hard they are under your skin. And because they're hard, your bones can support and protect your body. Two very important jobs. But another important thing your bones can do is change. Have you ever wondered how your baby bones became your kid bones? Your tiny baby bones had to change and grow to become bigger bones. In fact, your body's changing your bones right now to keep them healthy, and your body will keep changing them throughout your life. Changing bones is something your body does naturally. And it turns out, if you wear braces, your body will change the bones in your mouth so teeth can move. Isn't that wild? Here's how it works. Braces keep pushing and pulling on the whole tooth. That causes the root to press on the bone that's holding it. So your body starts changing the bone. It makes a new space. Now, as the braces push and pull, the tooth and its root can slowly move over. Then your body changes the bone again to hold the tooth in its new spot. When dentists take the braces off, your teeth are in new spots and the bones in your mouth are in new shapes. So in summary, braces push and pull on teeth to move them. But for teeth to move, our bodies have to change the bones in our mouth. That's pretty cool. Braces are an invention that works by using something our bodies are already good at doing, changing our bones. That's all for this week's question. Thanks, Drew, for asking it!