

## 23 - Guitars

What does a bow & arrow have to do with the guitar? Discover the history AND the science of the guitar on today's episode of Who Smarted? We love music over here at Who Smarted HQ so this was a really fun one for us to make & we hope you enjoy it as much as we enjoyed making it. Special tip of the hat to sound designer and technical director Josh Hahn for really bringing this one to life!

Your kids will discover how primitive hunters likely invented the idea of playing music on a string.

They will learn that how and why the electric guitar was invented, and how that changed music.

They'll take a tour through the 20th century history of music and discover how important a Hawaiian teenager and African-American musicians are to the development of the guitar's use in music.

And they'll learn how soundwaves work and how they influence the pitch of a guitar string in an interactive demo.

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IS THAT THE SOUND JERRY PLAYING THE WORLD'S TINIEST GUITAR?

Bonus info not in the episode: The [world's smallest guitar](#) is 10 micrometers long - about the size of a single cell - with strings 100 atoms wide. This amazing invisible instrument, the Nanoguitar, was created at Cornell University to demonstrate a new nano-technology. And since Jerry's fingers (and yours) are about 100,000,000 atoms wide, no, that is not the sound of Jerry playing the world's tiniest guitar. Because his fingers are one million times wider than the Nanoguitars string.

To put that into perspective, the average guitar string on a non-invisible guitar is around 0.02 inches wide. So a finger one million times bigger than that would be, oh, just over 160 feet wide... not so good for strumming. Here's what that tiny one-cell-sized guitar looks like - thanks Cornell!

More fun activities:

In the episode, we meet primitive hunters who invent the guitar with their bow and arrow. Draw a little comic strip about this moment.

Make a guitar! Take an empty tissue box, and wrap a rubber band around it. Slide two pencils or popsicle sticks under the rubber band parallel to the hole. Pluck away! Add different size rubber bands to add other notes.<sup>1</sup>

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<sup>1</sup> This activity guide is for the Who Smarted? podcast [www.WhoSmarted.com](http://www.WhoSmarted.com)