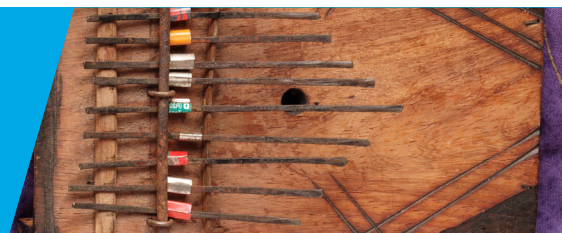


# CURIOSITY AT HOME

## PIN PLINKER



*The mbira is an African musical instrument, traditional to the Shona people of Zimbabwe. This percussive instrument is sometimes referred to as a “thumb piano” because it is played by plucking metal tines with the thumbs (and one finger). You can make your own version of a simple thumb piano using materials found at home!*

### MATERIALS

- Bobby pins (at least three)
- Two strips of cardboard (approximately 2” x 4”)
- Rubber bands (at least four)
- Tape or glue
- Hollow carton, box, or metal tin
- Scissors (optional)
- Science notebook or paper
- Something to write with



*A Zimbabwean mbira dza vadzimu. Photo by Alex Weeks*

### PROCEDURE

- Clip the bobby pins onto one strip of cardboard, leaving some space between each bobby pin. Place the other strip of cardboard on the bottom. Secure with rubber bands on both ends and between each pin.
- Stretch open the bobby pins. Gently push down on the pin’s end and allow it to pop back up. What type of sound does it make? Does it sound more like a “boing” or a “pop?”
- Try moving the bobby pins in and out. How does the pitch change? Try to arrange the bobby pins so that you can play a low, medium, and high pitch.
- Use glue or tape to securely attach your pin board to a hollow container or empty cardboard box. Pluck each pin with your thumb again. How does that change the sound or volume of your instrument?



# CURIOSITY AT HOME

## PIN PLINKER



### EXPLORE MORE

- Try varying the width you stretch the pins opens. How do widely stretched pins sound compared to pins barely spread open?
- Experiment with mounting your pin board on different types of containers. Does the material of the container affect the sound? Does the sound change if you place the pin board in the center versus near the edge of the container? How does the sound change if you cut a large hole in the middle of the container (above or below your pin board)?
- Try adding more bobby pins to your pin board. What range of pitches can you make? Can you create a musical scale, going in order from highest to lowest pitch? If you have multiple sizes of bobby pins, try adding them to your pin board. How does the size or length of the bobby pin affect the tone or pitch? What else affects the sound?



### DID YOU KNOW?

The mbira is part of a family of musical instruments called lamellophones. These instruments are recognizable by their series of thin flexible plates, or “tongues,” each of which is fixed at one end and free at the other. When plucked, the tuned plate vibrates, producing a unique sound. The length of the plate affects its pitch. Longer plates vibrate more slowly and have a lower pitch. Shorter plates vibrate more quickly and have a higher pitch.

Other types of lamellophones include the likembe and sanza from the Congo Basin, the electronic space harp, and the Cuban marimbula. Many music boxes contain mechanically played lamellophones.

Some lamellophones are mounted on a sound box. A sound box is a hollow box used to amplify, or increase the volume, of musical instruments. Traditional mbira players use a halved calabash gourd to amplify the sound. To learn more about the cultural history of the mbira and to hear it being played, check out [this video](#)<sup>1</sup>.



*A sanza. Photo by Achim Raschka*

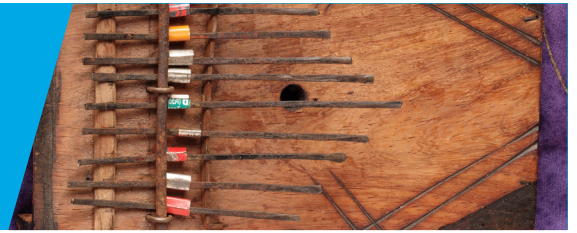
<sup>1</sup> <https://news.missouri.edu/2014/mbira-music>





# CURIOSITY AT HOME

## PIN PLINKER



### K-2 GRADE EXPLORATION

- Look carefully at the bobby pin when you press down and release it. What do you notice about the movement of the pin? Does each pin appear to move the same amount when you pluck it?
- Hold the pin board in your hand while you play it. Can you feel the vibrations?
- Pitch describes how high or low a sound is. Listen carefully to the sound each pin makes when plucked. Which pins makes the highest pitched sound when plucked? Which pin makes the lowest pitched sound when plucked? How does the position of the pin affect its pitch?
- What kinds of patterns can you play, using high, medium, and low notes?
- Draw a picture of your pin plinker mounted on a sound box in your science notebook. Which part makes the sound? Which part makes it louder? Label these parts!



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## PIN PLINKER



### 3–5 GRADE EXPLORATION

- Make a diagram of your completed pin plinker instrument. Include labels of different materials used, and explain how someone could play your instrument to produce a low, medium, or high pitch sound. Do you have any recommendations for how someone should mount the pin board on a sound box to produce a clear, loud sound? Record your diagram in the box below, or in your science notebook.



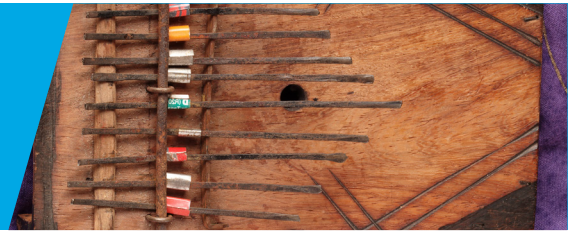
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# CURIOSITY AT HOME

## PIN PLINKER



### 6–8 GRADE EXPLORATION

- Try expanding the range of musical pitches you can play with your pin plinker by adding more pins. Use colors, numbers, or letters to label each pin.
- Now it's time to compose! Come up with a musical pattern of notes. Write down or notate your pattern so that someone else reading it could it play the same song as you.
  - Tip: Be sure they would know which “note” or pin to play and how quickly to play it.

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- Test it out with a friend or family member. Did they play the same song as you? What changes do you need to make to your notation to make it more clear for next time?



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