Creating Instruments from Found Objects and Sensors (Resource Exchange)

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Esmée Verschoor is a Communications and Journalism major at the University of St. Thomas in St. Paul, Minnesota. She is passionate about graphic design, visual communication and cultural studies. Currently, Esmée is the Visual Manager at the Playful Learning Lab, led by Dr. AnnMarie Thomas, where she creates, designs and implements educational materials focused on incorporating joy, whimsy and play into education.

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OK GO SANDBOX: SURROUNDING SOUNDS

OK GO SANDBOX

OKGoSandbox.org

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INTRODUCTION

It's not everyday that we realize that everyday objects can be used to create music. The purpose of this resource is to teach the properties of sound, and how surrounding items can be used to create music.
The properties of sound include resonance, pitch and amplitude and they each influence the behavior of sound waves. In terms of sound, resonance impacts how long the note rings for. Pitch is based on different frequencies, which is how fast the waves are moving, and are shown through the notes you find in a scale. A note with higher frequency will have a higher pitch. Amplitude is shown through how loud a note is. The larger the amplitude is, the louder the note is.

Resource Time: 25 - 45 min

Suggested Grade Levels: K-4

LEARNING OBJECTIVES

Students will be able to:

- Practice observation skills.
- Record and analyze data.
- Redefine what kind of objects can be considered instruments.
- Apply the process of trial and error in order to create a specific outcome.

STANDARDS

K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.*

4-PS4-3 Generate and compare multiple solutions that use patterns to transfer information.

5-PS1-3 Make observations and measurements to identify materials based on their properties.

MATERIALS

Bring in items yourself and/or encourage students to bring items from home

e.g. pvc pipes, bowls, tin cans, vases, bells, soft mallets, wooden blocks, plastic tubs etc.

ACTIVITY

Introduce some of the properties of sound, as outlined in the introduction, simplifying or expanding the subject as needed to fit the participants' prior knowledge of the subject.

Play OK Go's "Needing/Getting" music video on OkGoSandbox.org (Time: 3:53 min)

Play the "Surrounding Sounds" challenge video. (Time 5:01 min)

Ask a few questions to prompt and introductory discussion:

- Which unconventional instrument stood out the most in the OK Go's "Needing/Getting" music video and why?
- How did the band arrange or change the objects around them in order to get the sounds they needed?
- What kind of everyday items do you think could be used as unconventional instruments to create sound and music?

Gather the students into groups of 2-4. Have each group find and choose 4 different everyday items that they think can produce sound in unorthodox ways.

Briefly introduce:

Ask the groups to analyze and record the properties of resonance (how long the note stays), pitch (what note on a music scale they think it might be), and amplitude (loudness of the sound) for each item they chose. If some groups encounter items that can create multiple different sounds, have the students record a few different sound examples and specify what they did that changed the sound.

Using their items, challenge the students to replicate a simple song such as "Hot cross buns" or "Twinkle Twinkle Little Star" using their found objects. Encourage them to use the data they found to design and organize their song creation. (Optional: Have each group 'perform' their song to the class.)

Guide the students in a final discussion about sound and instruments:

- How did the size, shape, thickness or material impact the way the instrument sounded?
- Do you have anything in your backpack that you now think could be an instrument?
- Have you seen unconventional instruments before? Where?
- Have your thoughts about music changed? How?