KOHL CHILDREN'S MUSEUM

STEAM Explorers

THE PLACE WHERE AWESOME LIVES

Strike Up the Band

Tap, clang, pluck! Combine materials to discover the different sounds you can make with your own constructed instrument.

Big Idea

Students will create an instrument that has two or more ways to make sound and can be heard from a distance of at least 30 feet. They will address this design challenge while observing and investigating other real instruments.

Standards

K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.	Students will describe and explore different instruments, and use that information to solve the design challenge and create a new instrument that can be heard from 30 feet away and make two sounds.
11.A.ECa Express wonder curiosity about their world by asking questions, solving problems, and designing things.	Students will investigate the materials and instruments and inquire and learn about what they can do and how they can be used.
11.A.ECb Develop and use models to represent their ideas, observations, and explanations through approaches such as drawing, building, or modeling with clay.	Students will preplan their design and reference their original ideas and plans while constructing their instruments.

Materials

- Reusable resources such as paper plates, plastic cups, cardboard boxes, pie pans, cans, plastic eggs, chopsticks, ribbon, string and rubber bands
- Connectors such as tape, glue, a low-temperature glue gun, wire, pipe cleaners and brads
- Tools such as measuring tape, scissors and paintbrushes
- Items for decorating such as paint, feathers, pom-poms, glitter and beads
- Musical instruments
- Paper and markers, crayons or pencils

Setup

Display the reusable resources, connectors, decorations and tools in one accessible area, or at a table. At another table, display the musical instruments for students to reference and investigate. At the last table, leave open space for the students to work and design, with some writing utensils, paper or even some of the less bulky materials,

such as tape, rubber bands, etc. Allow the students to first investigate the instruments and use them as reference points if desired throughout the creation period. Then, they can choose their materials and move onto the workspace for creating.

Directions

Walk the students through the following different steps of the engineering design process.

1. Have the students examine the instruments and think about how sound is made, looking at the different shapes and sizes of the instruments. They can explore the materials, as well. Encourage them to draw or sketch their ideas, always keeping the design challenge in mind: *How will you design an instrument that makes at least two specific noises that can be heard 30 feet away?*
2. After the planning phase, students can explore the materials, choosing which they will need to create their own instrument. They can bring these materials to the creation station and get to work.
3. Throughout the process and when they've finished their design, students can test out the different elements of their instrument. Encourage students to reflect on what worked, or if their instrument has solved the design challenge. Is there a way to make the sound louder? If it doesn't work – or solve the design challenge – what changes can be made?
4. Invite students to show their instrument to others and instruct others on how their instrument is to be played. They can also ask others for suggestions or improvements that can be made.

Investigation Questions:

- What do you think you can use to make an instrument? How will you produce sound?
- What do you think will happen if you…?
- How can you make sounds with different parts of your body?
- What can you change so your instrument works better?