



12 + 12 OBJECTIVE

The students will explore sound waves, pitch and the correlation between sound and color.

VOCABULARY

Composition
Scale
Synesthesia (older Students)

MATERIALS

White Paper
Six pieces of construction paper in red, yellow, orange, blue, green and purple
Colored pencils or markers
Glass containers that are equal in size and shape- 6 per group
Measuring cups
Liquid watercolor paint
Spoon or small metal mallet- 1 per group

BEFOREHAND

Collect the materials
Visit the 12 + 12 exhibition in the UnMuseum and experiment with the notes and possible compositions.

DISCUSSION



Discuss Steve Zieverink's 12 + 12 exhibition.

Discuss the correlation between color and music. Are there colors that make you think of cold, hot, happy, sad, excited, etc?

PROCEDURE



Place the six pieces of colored construction paper on the board.

Have the students discuss which colors they associate with low musical notes and which ones make them think of higher pitches.

Have the students create a color scale by putting the colors in order from the ones they associate with lowest tones to those they feel represent the highest musical pitches.

Fill two glasses with water- one $\frac{3}{4}$ ths of the way and other one $\frac{1}{4}$ th.

Ask the students which of the containers they think will make the lower sound.

Demonstrate by striking each glass container. Explain that the musical tones are generated by sound waves and that the amount of water in the glass will determine how quickly or slowly the sound will travel. The sound waves will travel slower through the container that has the larger volume of water therefore the glass that is $\frac{3}{4}$ ths full will have a lower musical pitch than the glass that is only $\frac{1}{4}$ th full.

Split the students up into groups

For each group fill six glass containers with water in descending volumes (1 $\frac{1}{2}$ cup, 1 $\frac{1}{4}$ cup, 1 cup, $\frac{3}{4}$ cup, $\frac{1}{2}$ cup, $\frac{1}{4}$ cup) *These measurements can vary depending on the container used and desired sound.



Using the student generated color scale add food coloring to the water.

Using the metal mallet or metal spoon have the students experiment with this musical scale.

Using markers or colored pencils have the students compose a short song using color coded notes.

Have the students share their compositions with the class and/or create a class orchestra and perform the various student generated compositions.

EVALUATION

Evaluate each student's participation in the discussions and brainstorming activities.

Evaluate the student's ability to work in collaboration