



MICROPHONES: A BEGINNER'S GUIDE

Meets National Core Arts Standards 9, 11

OBJECTIVES

- Apply criteria to evaluate artistic work (*Re9*)
- Relate artistic ideas and works with societal, cultural and historical context to deepen understanding (*Cn11*)

MATERIALS

- *Music Alive!* magazines (April 2018)
- Computer or mobile device with Internet access
- Pencil and paper

START

► **1. Ask your students to read** “Microphones: A Beginner's Guide” on pages 6-9. Then, go over the following highlighted words. [**This reinforces comprehension and vocabulary.**]

TRANSDUCER—a device that converts natural energy into an electrical signal, or vice versa

DIAPHRAGM—a flexible membrane in mechanical or acoustic systems

CAPACITOR—a device used to store an electrical charge, consisting of one or more conductors

SUSCEPTIBLE—likely to be harmed

PARAMETERS—measurable factors that define a system or set its boundaries of operation

DEVELOP

1. Visit musicalive.com/microphones to play the video Microphone Comparison: Trombone. Pause the video at 0:50, and ask students the following questions. (To get the most out of these videos, please make sure to play them on the highest quality sound system or earphones you have available.)

ASK

Out of the three microphones shown, which to you sounds the best? (Subjective.)

Do you hear much of a difference between the condenser and dynamic microphone? (The condenser mic is capable of picking up subtler differences in sound.)

Do you hear much of a difference between the different sides of the ribbon microphone? (Subjective.)

How does the ribbon microphone's sound compare to the condenser and dynamic mics? (The ribbon mic is significantly warmer.)

Based on your reading, how are the inner designs of each microphone different? (The dynamic microphone has a diaphragm in front of a magnet wrapped in a voice coil. The condenser has a capacitor, or two plates between which the electrical signal is generated. The ribbon mic has a thin metal ribbon that vibrates between two magnets to create the signal.)

► **2. Play** the Trombone video from where it was left at 0:50 until 1:20, and ask students the following questions.

ASK

How does the Audio Technica AT3525 Condenser mic compare to the Audio Technica Pro 35 clip-on mic? (Subjective.)

Based off of your reading, in which setting would the first mic be used? (In a studio.)

How do the DSLR camera, iPhone, and Zoom condenser microphones compare to the first two condenser mics? (They have much more background noise.)

Out of those three, which one captures the highest fidelity sound? (The Zoom condenser mic.)

In what setting would it be appropriate to use a DSLR camera mic to capture sound? (When creating videos where high quality sound isn't important.)

Where are Zoom microphones like the one shown typically used? (In uncontrolled sound environments where someone is looking to capture a decent recording, for example, in a rehearsal or concert.)

3. On the musicalive.com/microphones page, play the next tutorial video, Microphone Comparison: Ribbon, Dynamic, Condenser. Then, ask students the following questions.

ASK

Within the first two minutes of the video, the guitarist plays through an amp into three different microphone setups. Which to you sounds the best? (Subjective.)

How does the dynamic microphone alone compare to the ribbon microphone alone? (Subjective; ribbon microphones are capable of capturing far subtler tones than dynamic microphones.)

At 4:30, we hear how ribbon microphones can be used on drum kits. How does the sound compare between the ribbon mic by itself and the combination with the condenser mics? (Subjective. The mix creates a much fuller, multi-dimensional sound.)

CLOSE

On the musicalive.com/microphones page, visit the Sweetwater Microphone Shootout website. Play through a variety of examples for students. Then, select three models to focus on, and play their sound samples for students repeatedly. On a piece of paper, ask them to rank the models in order of personal preference, and elaborate on why they chose the order they did. Then, go around the classroom and have students share their answers.

ASSESS

Did the students read the article?

Did they watch the tutorial videos?

Did they answer the supplementary questions?

Did they write about their reactions to the microphones on the Sweetwater site?