**How Wireless Works**

National Standards: 1, 7, 10-11

Wireless microphones and sound systems are a simple and accurate method of transmitting sound. There are three parts of a wireless microphone system: the microphone, transmitter and receiver. All three work together to enable musicians to perform on the stage without fighting a sea of messy cords.

**Prepare**

Have students discuss their experiences going to a live concert or to a theatrical performance and watching the performers on the stage. Do they notice headsets on some of the performers? Headsets are popular options when performers are both singing and dancing so as to free them up from having to hold a microphone. Can students imagine some of the productions they've seen with cords all over the floor? How would a corded microphone situation make performing more difficult - even dangerous - in certain situations?

Key points in the article:

• There are three major kinds of wireless microphones: handheld, headset and lavalier.

• Wireless microphone systems are often sold in packages, which work together. Usually, one manufacturer's receivers don't work with another manufacturer's mics and transmitters.

• The wireless signal travels through the air like radio waves and is detected by a receiver that sends the sound to a mixer and then a PA system for amplification.

**Begin**

Review vocabulary words from the article:

• FREQUENCY: the particular waveband at which a radio station or other system broadcasts or transmits signals.

• RECEIVER: the box with antennas that is connected to a mixer; the part of a device in which electrical electrical signals are converted into sounds.

• TRANSMITTER: a collection of equipment used to create and transmit electromagnetic waves with messages or signals.

• MICROPHONE: an instrument for turning sound waves into electrical energy variations to be amplified, transmitted, or recorded.

• LAVALIER: is a small microphone that is attached either directly to an performer's body or their clothing.

**Discuss**

Read through the story, discuss the parts of a wireless system, have these devices on hand, and have students inspect and set them up to work. Note the connection on a mic to a charging station. Discuss the difference between a lavalier mic and a headset mic. Discuss the notion of discreet channels on the receiver.

**Questions**

1. What is the role of a transmitter in wireless?

2. What are the three parts of a wireless microphone?

3. How is audio transferred in a wireless microphone system?

4. What are three major kinds of wireless microphones?

5. What does a transmitter do?

6. In what forms are transmitters available?

**Answers**

1. The transmitter sends a radio frequency (RF) signal to a receiver, which gets that signal and then transmits the audio to the mixer.

2. Microphone, transmitter and receiver.

3. Audio is transmitted using radio frequencies.

4. Handheld, headset and lavalier.

5. A transmitter is there to transform the audio signal it gets from the mic into a signal that the receiver is able to pick up, then send it wirelessly.

6. Transmitters are available in three forms: handheld, plug-in belt pack and receiver.

**Expand**

Have students go online and determine which wireless system to "purchase" for their needs. They don't need to push "buy," but have them read up on the different wireless systems available, pick their preferred wireless system and explain their choice.