

Kennedy Center Partners

Arts Integration

Lesson Plan

Lesson Name: Body Systems

Goal: To integrate science and language arts content learning along with visual, kinesthetic, and musical arts.

Objectives:

The students will learn and demonstrate how parts of the muscular and respiratory systems are used in the singing process.

Grade Level: 5

Arts Standards addressed:

CS 1:9 - Sing with appropriate timbre and posture.

CS 5:6 - Observe and identify ways in which the other principles and subject matter of other disciplines taught in the school are interrelated with those of music.

Other Subject Areas Standards addressed:

See Body Systems lesson plan by science and language arts teachers.

Instructional Outline:

Introduction:

In this lesson students will learn how the muscular and respiratory systems work together when they sing. They will be using pictures and objects to see relationships between parts of the body and to simulate how these parts move during the singing process. They will learn a simple song to use as they experience the process. Selected students will also use their bodies to create a "magnified view" of the "singing system."

Classroom Management Strategy:

The teacher will instruct the class to move from area to area in the music room for each demonstration and students will be actively moving to identify and use the parts of the body while learning about them and while singing.

Prep Activity:

The teacher will gather materials and set them up in the appropriate areas of the room.

Main Activity:

Introduction: Students list the systems of the body and deduce that the respiratory and muscular systems are the ones used in singing. Echo/sing “The Song” on two 5-note ascending and descending scales: “Resp’ratory and muscular systems u-sed fo-r si-ngi-ng. Ah – ah - ah” “Ah’s are sung on Do So and high Do.

Each section in the lesson takes part in a different area of the classroom.

Area 1 . The diaphragm.

Explain that the diaphragm is a flat, pancake-shaped involuntary muscle that moves down and flattens on the inhale and relaxes upward on the exhale. This creates room in your body for the lungs to expand when you inhale. Demonstrate with hands. Students demonstrate either with hands or by doing push-ups. One student is designated to say “inhale, exhale . . .” Then instruct them to inhale, while pushing their hands down or doing the downward position of a push-up and sing “The Song.”

Area 2. The intercostal and abdominal muscles.

Tell students these are the voluntary muscles that move the diaphragm. Using a small skeleton, have a student point out where the intercostal and abdominal muscles would be. Invite another student to open and close a Hoberman sphere to demonstrate the expansion and contraction of the muscles and how one can hold the muscles out or squeeze them to control the output of air while singing.

Have students feel for their ribs and intercostal muscles. With hands around their ribs, then on the abdominal muscles, have them inhale and exhale a few times as a student leader directs. Teacher checks for correctness.

Have students put one hand on abdominals and the other on intercostal muscles, breathing a few times, while student directs the inhale and exhale. Then breathe in and sing “The Song” a few times on one breath, while squeezing the muscles for breath support.

Direct six students to work together using their bodies to imitate the action of the ribs and muscles of expiration and inhalation.

Area 3. The lungs.

Using an upward motion with your hand, instruct everyone to take a big breath. Complement any who breathe by consciously expanding their muscles as above. But note that many students took a breath by raising their chests and shoulders.

Give a round un-used balloon to each of 2 students. While demonstrating with a third balloon, fill up the top part of a balloon with air and point out that when they raised their chests and shoulders, they only filled up the top part of their lungs. Assure them there’s nothing wrong with that kind of breathing. It will keep them alive! However, it’s not enough air to be an effective singer. Using the kind of expansive breath we just experienced when talking about

the abs and intercostals, we can FILL our lungs with air and really give our muscles something to control! Fill up balloons all the way. Have students breathe both ways and compare.

Using 2 sets of partners, have them imitate the expansion and contraction of the lungs by kneeling, facing each other and holding hands and expanding and contracting their position as a student instruct "inhale, exhale." Inhale and sing "The Song."

Area 4. Bronchial tubes, trachea (windpipe), larynx (voice box), and vocal cords

Show a picture of the respiratory system. Point out diaphragm, where the muscles would be, the lungs with alveoli, bronchial tubes, and trachea (windpipe) and larynx (voice box). Review the function of each part. To prevent mispronunciation of "larynx," have students chant the word, as in a cheer, several times while punching fist into the air.

Show close up pictures of the larynx. Have them feel their own trachea and Adam's apple, the front of the larynx. Have two students "create" bronchial tubes and trachea by kneeling in an upright position, facing each other, holding hands in an upright position with arms touching. Have a fourth student create a large "voice box" with his/her hands at the top of the "trachea."

Show drawing of the open and closed vocal cords. Explain that these are muscles that open when breathing, When talking or singing, they are vibrate and open and close. With tips of forefingers touching and pointing toward students (as though the fingers were vocal cords attached to the Adam's apple) open, shut, and vibrate the fingers. Have students feel the vibrations in their throat as they talk or sing.

Notice that the larynx moves upward when talking or singing in a high voice and downward when using a low voice. With one student stretching and unstretching a rubber band and another student plucking it, review that a stretched rubber band makes a higher pitch than when thicker and unstretched. This is true of the vocal cords, as well. When we use a high voice, our vocal cords stretch and get long and skinny. But they don't stretch outward, the ligaments and muscles in our larynx pulls them upward.

Select a student to use his/her hands to create moving "vocal cords" inside the "larynx" created by the previous student. Have the other students put their hands on their throats and feel this as they sing "The Song."

Conclusion and Review:

Using students as above, review parts of the body while creating a tableau of the parts of the singing anatomy. Select one student to direct the movement of inhalation and exhalation a couple of times. Then all inhale and sing "The Song."

Additional Information:

Materials Needed:

Poster of respiratory system, pictures of larynx and vocal cords, small skeleton, 9" Hoberman sphere (see Hoberman.com), balloons, rubber band, written review/assessment.

Outcomes/Assessment:

Students will demonstrate the moving tableaux with a brief explanation of their learning at a school assembly about arts integration.

Students will complete a review sheet during music class. (see below)

Students and teacher will continue to assess correct posture and breathing during singing time.

Potential Challenges:

Arranging a time to practice on the stage before the assembly.

Eight Habits of Mind:

Engage and persist: Students will need to engage their minds and bodies to learn and practice the concepts being taught. As they sing in future music classes and elsewhere, they will need to persist in remembering and practicing the techniques in order to master them.

Envision: As the parts of the body being discussed cannot be seen by individual students, the lesson plan includes visible objects (skeleton, Hoberman sphere, etc.) to help students visualize what is happening during breathing.

Reflect: As students continue to sing in music class, they will be encouraged to observe how well they are remembering to use the principles taught.

Written review:

Name _____

WHAT DO YOU KNOW ABOUT HOW THE BODY WORKS FOR SINGING?



On the line beside each number (1-9), write the LETTER that is beside the word that corresponds to the definition. Draw a circle for # 10.

___ 1. The muscles that connect the ribs.

A. Larynx

___ 2. Another name for the voice box.

B. Chest voice

___ 3. The tiny muscles that vibrate when

C. Head voice

you sing or talk.

- ___ 4. The flat muscles that moves down when you inhale.
- ___ 5. The place where the air goes when you breathe.
- ___ 6. The part of your body that should NOT go up and down when you breathe to sing.
- ___ 7. The "light voice"
- ___ 8. The "heavy voice"
- ___ 9. The muscles that control the output of air when you sing.
- ___ 10. The direction your abs and intercostal muscles should go when you INHALE (breathe IN) is: (circle one) In or Out
- D. Shoulders and chest
- E. Intercostal muscles
- F. Abdominal muscles
- G. Vocal cords
- H. Lungs
- I. Diaphragm

