Introduction to the Orchestra

Grade Level:
3-5
6-8

Integrated Subjects
Language Arts, Performing Arts-Music, Performing Arts-Other, Technology

Lesson Overview
Students will hear a murder mystery story narrated with orchestral background; while listening they draw a picture of how they are hearing the story. After hearing the story they write letters to the popular children's author Lemony Snicket. (The teacher can mail the letters to the author.) The students will have learned the basic physics of acoustics and sound through hands on application. They will then learn section-by-section, the instruments in the strings, woodwinds, brass, and percussion sections of the orchestra. A hand on demonstration is limited only by instrument availability. A reference book with CD provides the sound, range, and orchestral excerpts featuring each instrument for those instruments unavailable. Overview lesson plans, an orchestra map, worksheets and sample student work are provided.

Student Learning Overview
Students will gain a basic knowledge of acoustics; the families of instruments in the orchestra; am instrument’s pitch range; and how sound is produced by an instrument.

Learning Sequence
1. Listen to story The Composer is Dead while drawing to express what they feel or hear in the music. 2. Write letters to Lemony Snicket. This can be done while listening to the CD story a second time. 3. Explain and demonstrate basic acoustics (class prep notes included in Portfolio Document section); be sure to have class participation in playing tubes and strings of various lengths. A classroom xylophone is useful. 4. Explain and demonstrate the main sections of an orchestra. Demonstration may include any available instruments, particularly played by the students with instruments that others may sample. Play the CD for sound, pitch range, and orchestral samples.

Assessment
Work assessed: drawings (all acceptable as they are the students individual perceptions), letters with sentence/paragraph requirements based upon grade level, worksheets to assess direct learning of the principles of acoustics and the orchestra. Worksheets are designed to meet the needs of multiple grade levels and reinforce the learning.
Classical Music Used In This Lesson


Viola: *Sinfonia Concertante for Violin, Viola and Orchestra in E-flat major*, third movement, *presto* by Wolfgang Amadeus Mozart

Cello: *The Carnival of the Animals*, The Swan by Camille Saint-Saëns

Bass: Symphony No. 1 in D major, third movement by Gustav Mahler

Piano: *Sonata No. 21 in C major, Op. 53*, Waldstein, first movement, *allegro con brio* by Ludwig van Beethoven

Harp: *The Nutcracker*, Waltz of the Flowers by Pyotr Ilyich Tchaikovsky

Flute: *Flute Concerto No. 2 in D major*, first movement, *allegro aperto* by Wolfgang Amadeus Mozart

Oboe: *Peter and the Wolf*, The Duck by Sergei Prokofiev

Clarinet: *Rhapsody in Blue* by George Gershwin

Bassoon: *The Sorcerer’s Apprentice* by Paul Dukas

Saxophone: *L’Arlésienne, Suite No. 1*, first movement, Prelude, *allegro deciso* by Georges Bizet

Trumpet: Symphony No. 5, first movement, Trauermarsch (Funeral March) by Gustav Mahler

Trombone: *Overture to Tannhäuser* by Richard Wagner

French Horn: *Horn Concerto No. 4 in E-flat major*, third movement, *rondo: allegro vivace* by Wolfgang Amadeus Mozart

Tuba: *Semper Fidelis* by John Philip Sousa

Timpani: *Also sprach Zarathustra, Op. 30*, by Richard Strauss

Xylophone: *Danse macabre, Op. 40* by Camille Saint-Saëns

Tubular Bells: *1812 Overture* by Pyotr Ilyich Tchaikovsky

Snare Drum: *Boléro* by Maurice Ravel

Triangle: *Sheherazade*, fourth movement, Festival at Baghdad, The Sea by Nikolai Rimsky-Korsakov

Cymbals: *The Sanguine Fan, Op. 81* by Edward Elgar

Materials & Equipment

CD player; *The Composer is Dead* written and narrated by Lemony Snicket, music by Nathaniel Stookey; *Those Amazing Musical Instruments* by Genevieve Helsby; hollow tubes of various lengths for soprano, alto, and tenor; strings or wires of various length and thickness; access to orchestral instruments

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Time Required
Four to six 60-minute sessions, depending on grade level

National Music Standards
Listening to, analyzing, and describing music
Understanding relationships between music, other arts, and outside disciplines

State Standards
California Standards: Grade 2 English-Language Arts 2.0; Grades 5-8 Music 3.0, 4.0; Science: Investigation and Experimentation

Connections to Pathways to Integration
GREEN: Music content merged with other content areas

Teacher to Teacher
Students wanted to hear *The Composer is Dead* a second time. Letters which the class writes may be sent to Lemony Snicketm c/o Harper Collins Publishers, and you may receive autographed photos of the author in return.
Worksheet #1 – The Orchestra

1. Ensemble means a group of musicians. An orchestra is an
   __________________________ that has about
   __________________________ musicians, also called instrumentalists.

2. Sometimes an orchestra’s name will include the words
   __________________________ or __________________________.

3. There are over __________________________ youth orchestras in the United States.

4. There are four sections in the orchestra. They are the
   __________________________, __________________________,
   __________________________ and __________________________.

5. The person who leads the orchestra is called the __________________________.

6. A famous woman conductor’s name is __________________________
   __________________________. She conducts the Baltimore Symphony Orchestra.

7. A famous man conductor’s name is __________________________
   __________________________ __________________________. He
   conducts the San Francisco Symphony Orchestra.

Word Choices:

- conductor
- ensemble
- brass
- Michael Tilson Thomas
- 100
- woodwinds
- symphony
- 400
- strings
- Marin Alsop
- percussion
- philharmonic

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Worksheet #2 — Acoustics

1. Sound is ____________________.

2. When you strike something and hear a sound it is ____________________.

3. Vibration produces sound ____________________.

4. When a string is long, its sound is ____________________, when a string is short its sound is ____________________.

5. When a tube is short its sound is ____________________, when the tube is long its sound is ____________________.

6. Three instruments that produce a high sound are ____________________,
   ____________________ and ____________________.

7. Three instruments that produce a low sound are ____________________,
   ____________________ and ____________________.

8. The ____________________ the vibration, the higher the sound.

9. The slower vibration, the ____________________ the sound.

10. When you play your recorder, it makes sound because ____________________
    ____________________
    ____________________
    ____________________.

11. A high instrument’s sound wave looks like:

12. A low instrument’s sound wave looks like:
Worksheet #3 – String Instruments and Percussion Instruments

True or False

1. __________ The viola is the highest pitched string instrument.

2. __________ The cello has a warm and deep sound.

3. __________ The bass is the largest string instrument and has the lowest sound.

4. __________ The biggest string instruments have the longest bows.

5. __________ Long, thick strings produce low sounds.

6. __________ Albert Einstein played the cello.

7. __________ Percussion instruments can be tuned or untuned.

8. __________ The gong is an untuned percussion instrument.

9. __________ The timpani, marimba and chimes are tuned percussion instruments.

10. __________ Untuned percussion instruments include the gong, chimes and cymbal.

11. __________ Three types of drums are bongos, snare and tambourine.

12. __________ The piano and harp are in both the string and percussion families.

13. __________ A fast vibration produces a high sound.

14. __________ Viola music is written in bass clef.

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Worksheet #4—Woodwind and Brass Instruments

1. “Mr. Cool” is the ____________________________.

2. The four basic woodwind instruments are ____________________________,
   ____________________________, ____________________________ and
   ____________________________.

3. The longer the tube, the ____________________________ the note.

4. Woodwind instruments produce different sounds by covering and uncovering the
   ____________________________.

5. Ancient flutes were made from ____________________________
   ____________________________.

6. Three additional instruments that add ‘color’ are ____________________________,
   ____________________________ and ____________________________.

7. Two woodwind instruments are made from metal. The ____________________________
   is made from ____________________________ and the
   ____________________________ is made from
   ____________________________.

8. ____________________________ and ____________________________
   produce a scary sound that was used in war to frighten the enemy.

9. The four basic brass instruments are ____________________________
   ____________________________, ____________________________ and
   ____________________________.

10. All brass family instruments are folded or ____________________________.

11. The water key is opened to let out ____________________________.
    ____________________________ builds up because warm air is blown down a cold tube.
Lesson 1 – Orchestra

- A group of musicians is an ensemble. Thus, an orchestra is an ensemble of about 100 people.
- An orchestra is like one large instrument held together by the conductor (e.g., Symphony concert and *The Composer is Dead*).
- Symphony, Philharmonic are often included as part of the orchestra’s name.
- How many orchestras? Over 500 Symphonies and 400 youth orchestras.
- Famous woman conductor: Marin Alsop, BSO.
- Famous man conductor: MTT, SFSO
- Four sections: Strings, Woodwinds, Brass and Percussion. Piano and Harp are sometimes considered strings and sometimes percussion.

Lesson 2 – Acoustics

- Acoustics is the study of sound that is not electrically enhanced or modified.
- Drop a pan on the floor and it makes noise. Sound is called vibration.
- Vibration is sound waves (draw picture, explain wave)
- Low sounds produce (draw picture)
- High sounds produce (draw picture)
- The science behind:
  
  For example, sound travels at about 340 m/s in room temperature air. If somebody strikes the "A" key near the middle of a keyboard, our ears vibrate at 440 Hz. What is the wavelength of this note?
  
  Speed of sound/wavelength = pitch
  \[
  (340 \text{ m/s}) = (440 \text{ Hz}) \times \text{wavelength}.
  \]
  
  So, wavelength = \(\frac{340}{440} = 0.77 \text{ m}\)

- Strings: Long strings produce low sounds. Short strings produce high sounds.
- Tubes: Long tubes produce low sounds. Short tubes produce high sounds.
- Strings – sound is formed by bowing the instrument.
- Winds – sound is produced by the air vibrating in the tube. This is how your recorder produces sound.
- Examples of high sound instruments.
- Examples of low sound instruments.
Lesson 3 – Sound of String and Percussion Instruments

- **String instruments** are: violin, viola, cello, bass.
- Violin is highest sounding instrument. Draw treble clef. Albert Einstein played violin.
- Cello has a warm deep sound. Draw bass clef.
- Viola written in different alto clef (draw). Not much literature. Poor cousin to violin.
- Bass is the rock of the orchestra. Music in bass clef. Largest and lowest instrument in the orchestra.
- Interesting fact: The lower the instrument, the shorter the bow. The lower the sound the longer and thicker the string.

- **Percussion instruments** are usually struck
- Percussion instruments can be tuned to a specific pitch or untuned
- Tuned: marimba, timpani, and chimes (play sound)
- Untuned: gong, bongos, snare, tambourine, and cymbal. (play sound)

- **Piano and Harp**
- Members of both families – both strings and struck
- Play examples of both
Lesson 4– Sound of Woodwind and Brass Instruments

- **The four basic woodwind instruments** are: oboe, flute, clarinet, and bassoon.

- Composers use additional instruments to add color to the sound: English horn, piccolo, bass clarinet, contrabassoon.

- The saxophone is also in the woodwind family – “Mr. Cool.”

- Originally, the woodwinds were made of wood except ancient flutes were made from animal bone. Today they are made from metal, most often silver or silver-plated nickel. The sax is made from brass. Why is it a woodwind?

- Many instrumentalists play both instruments in their family member.

- “The longer the tube, the lower the note”

- Holes down the length of the tube are covered and uncovered to produce different sounds.

- Aristotle (ancient Greek philosopher) said, “The flute is not an instrument which has a good moral effect. It is too exciting.”

- **The four basic brass instruments** are: trumpet, trombone, French horn, and tuba. All are made of brass.

- All brass family instruments are folded or coiled around. The bends and twists do not affect the sound.

- The original brass instruments were animal horns.

- The water key is opened to let out condensation not spit! Condensation builds up because warm air is blown down a cold metal tube.

- Trumpets and drums produce a scary sound. In wars this sound could frighten the enemy.