The Amazing Music Machine

The Amazing Music Machine – Teacher Packet

Thank you for choosing to participate in the 2024/25 Mission Imagination production,The Amazing Music Machine. We applaud and appreciate your decision to engage your students in this exciting musical experiment with the Omaha Symphony.

We hope this packet will serve as a resource for you as you prepare your students to attend Mission Imagination.

OMAHA SYMPHONY

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Chapter 1

Standards & Objectives

In this chapter, you will find:

- **National Standards & Objectives**
- **Nebraska & Iowa Standards**

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National Standards & Objectives

This program is designed to address the following National Core Arts Standards:

- **Performing -** Anchor Standard 6. Convey meaning through the presentation of artistic work.
- **Responding -** Anchor Standard 7. Perceive and analyze artistic work.
- **Responding -** Anchor Standard 8. Interpret intent and meaning in artistic work.
- **Connecting -** Anchor Standard 11. Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.

Through classroom activities and concert attendance we believe that students will be able to:

- Identify the instrument and instrument families of the orchestra.
- Demonstrate knowledge of how instruments create sound through vibration.
- Relate music to other areas of the curriculum and daily life.

We encourage you and your students to:

CREATE!

Students will be invited to play a hand made instrument during the concert. Be sure to make your TOP SECRET: Sound Machine!

SING!

During the performance, your students will be encouraged to sing “Hickory Dickory Dock.” Check out the music!

PARTICIPATE!

Mission Imagination is an interactive production! Students should be ready to participate and follow along in several guided activities.

LISTEN!

Expose your students to the music from the program prior to the concert!

EXPLORE!

Students will be learning about the orchestra, its instrument families, and how these instruments make sound. Check out the activities in this packet to explore these topics.

CONDUCT!

Students will have the chance to conduct along with the Omaha Symphony. Try your hand at conducting before coming to the concert.

State Standards

Nebraska K-12 Fine Arts Standards:

- FA 2.4.2 Students will sing and/or play instruments to a variety of music that includes music elements of rhythm, pitch, dynamics, and form.
- FA 2.4.3 Students will recognize and describe elements of music to demonstrate how music makes them feel (impact of music).
- FA 5.4.2 Students will sing and/or play instruments to a variety of music that incorporates multiple elements of music.
- FA 5.4.3 Students will identify and describe elements of music to discern how music is appropriate for specific purposes/settings (intent of music).
- FA 2.2.1 Students will use the creative process to make works of art with a variety of materials.

Nebraska Birth to Five Creative Arts Standards:

- (PK) Music, CA.01: Develops foundational skills to support creative expression through voice, instruments, and objects
- (PK) Visual Art, CA.02: Develops foundational skills that support creative expression through the process, production, and appreciation of visual art forms
- (PK) Movement, CA.03: Develops foundational skills that support creative expression through movement
- (PK) Dramatic Play, CA.04: Expresses creativity using puppetry, storytelling, dance, plays, and theater

Iowa Core Fine Arts Alignment:

- MU: Pr6.1.3 a. Perform music with expression and technical accuracy; b. Demonstrate performance decorum and audience etiquette appropriate for the context and venue.
- MU: Re7.1.K a. With guidance, list personal interests and experiences and demonstrate reasons behind musical preferences.
- MU: Re8.1.K a. With guidance, demonstrate awareness of expressive qualities (such as dynamics and tempo) that reflect creators'/performers' expressive intent.
- MU: Cn11.0.3a Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life.

Iowa Early Learning Standards:

- 5.1PS (Art) Children participate in a variety of art and sensory-related experiences.
- 5.2PS (Music, Rhythm, Movement) Children participate in a variety of music and movement experiences.
- 5.3PS (Dramatic Play) Children engage in dramatic play experiences.

Chapter 2

Pre-Concert Activities

In this chapter, you will find:

- **Program Synopsis**
- **Listening Guide**
- **Blueprints for TOP SECRET: Sound Machine**
- **Sing-Along: “Hickory Dickory Dock”**

OMAHA SYMPHONY

Program Synopsis

Professor Webersteinmahler von Strauss, Jr. has invited the Omaha Symphony to partake in his “Great Musical Experiment.” With the help of his “assistants”– the audience members – the Professor experiments with sound. Together, they show conductor Serena Reuten what they have discovered with their homemade instruments (Perpetuum mobile).

The Professor reveals his “machine of music” to the orchestra. A machine that collects sound vibrations, the Professor claims that it will create the ultimate musical experience. He is only missing a few sounds before his machine is complete, but he must finish it before his evil assistant can sabotage him!

With the help of the conductor and the orchestra, the professor and his assistants collect the final sounds they need from the strings (Fantasia on Greensleeves), brass (Triumphal March), woodwinds (Danse de Cygnets), and percussion (Fossils). The professor also collects the sound of the human voice as everyone sings “Hickory Dickory Dock.”

Eventually, the machine is ready! Anxious to try it out, the Professor challenges the orchestra to a musical duel. In celebration of the end of the experiment the orchestra plays Tritsch-Tratsch Polka, with some help from the audience (Conduct-a-long.)

Concert Listening Guide

HOW TO LISTEN

TAP for YOUTUBE - Embedded in the song titles are hyperlinks to YOUTUBE that can be used for listening to each selection.

Slavonic Dances by Dvorak

- This is the first piece of The Great Musical Experiment.

Perpetuum mobile by *Strauss, Jr.*

- The homemade instrument piece - Don't forget your TOP SECRET SOUND MACHINE!

Fantasia on Greensleeves by *Vaughn Williams*

- Students may recognize this tune. Make sure they listen for the harp!

Triumphal March from *Aida* by *Verdi*

- A feature for the brass section. This selection from *Aida* is a great piece to get your students up and moving! Can they hear the trumpet?

Danse de Cygnets from *Swan Lake* by *Tchaikovsky*

- Ask students to listen for the woodwinds in this piece.

Fossils from *Carnival of the Animals* or *Kodály: Háry-János-Suite Movt. 4 & 6*

- What kind of fossils are they? What percussion instruments can they hear?

Tritsch-Tratsch Polka by *Strauss, Jr.*

- Our conduct-along piece! Get ready because it's your chance to conduct the orchestra!

STUDIO C12 | Drawing No. 2 | Rev. 3
Scale 1:1 | Title Blueprint

TOP SECRET: Sound Machine

Materials List:

- Empty plastic bottles w/ lids
  (2 per student)
- Dry pasta noodles
  (¼ cup per student)
- Glue stick or bottle (enough to share)
- Sharp scissors
  (enough to share)
- Balloons
  (1 per student)
- Plastic Straws
  (1 per student)
- Rubber bands
  (5 per student)

STUDIO C12 | Drawing No. 2 | Rev. 3
Scale 1:1 | Title Blueprint

TOP SECRET: Sound Machine

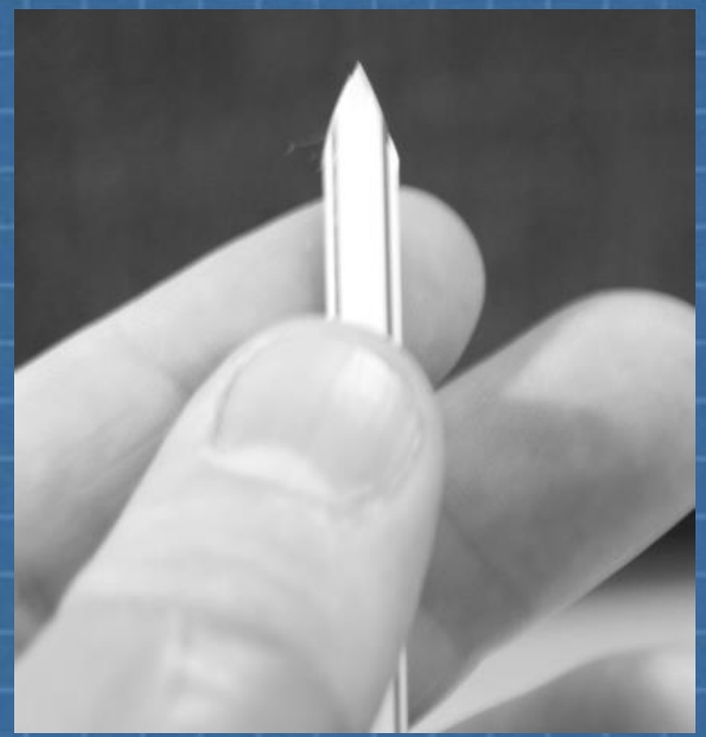
Step 1: Gather your materials

Step 2: Put pasta in 1 plastic bottle & glue the lid shut.

3: Cut off bottom of 2nd plastic bottle and balloon.

Step 4: Place balloon over the lip and inside of plastic bottle.

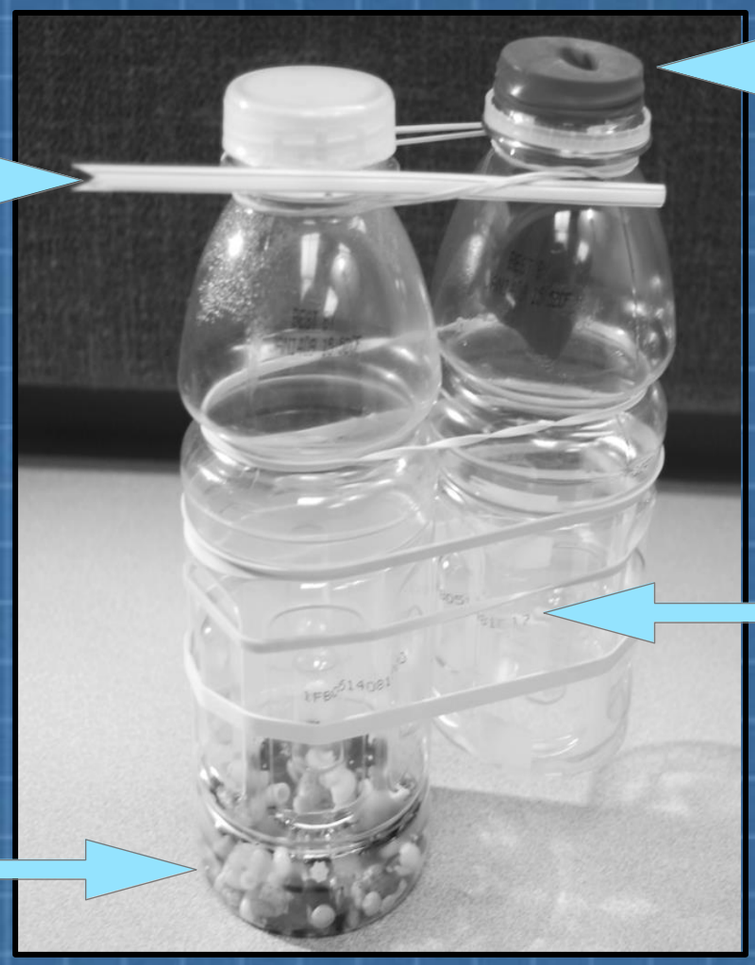
Step 5: Cut straw into “ ∧ ”shape



Step 6: Using rubber bands, attach water bottles together.

Step 7: Put straw through rubber bands.

Step 8: Play your TOP SECRET: Sound Machine



Sing-Along: “Hickory Dickory Dock”

Hickory dickory dock

The mouse went up the clock

The clock struck one.

The mouse ran down

Hickory dickory dock

Chapter 3

The Orchestra

In this chapter, you will find:

- **Hello, from the orchestra!**
- **Orchestral Introduction**
- **Meet the Orchestra!**
- **Instrument Families & Quiz**

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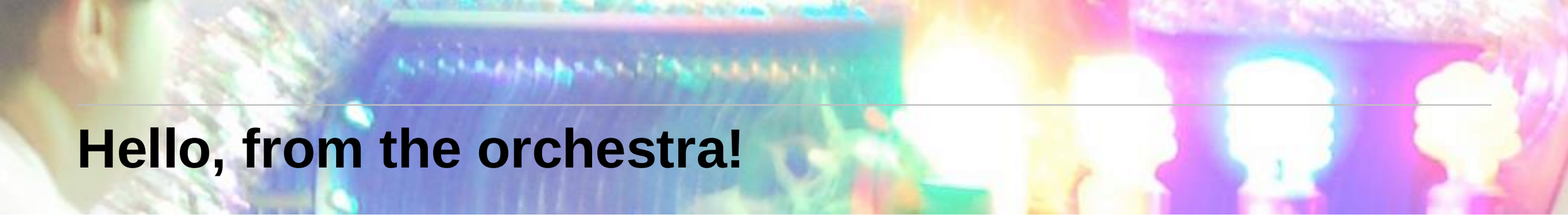


Hello, from the orchestra!

Dear Student,

We are very excited that you'll be assisting us with Professor Webersteinmahler von Strauss, Jr.'s Great Musical Experiment!

When you arrive many of us musicians will already be there, getting ready to play for the concert. You'll probably hear cellos or violins from our string family, clarinets or flutes from our woodwind family, trombones from our brass family, and lots of percussion instruments, like the drums. We'll be making lots of noise on our instruments, so that we can play our best for you!

At the beginning of the concert, our concertmaster stands up and helps us tune. We do this so we can play well together. Then, the conductor comes out so that we can begin. Everyone in the audience claps to show how happy they are to be there, and that they are ready to listen to us play. Then, the concert begins!

During the concert, there will be lots to see, hear, and do! The best way to show us that you are having a good time is by being a good listener and clapping after each piece. You will be asked to play and sing with us, and you will get the chance to conduct the orchestra!

We hope that you enjoy our concert and can't wait to see you there!

Sincerely,

The Musicians of the Omaha Symphony

Orchestral Introduction

What is an Orchestra?

An orchestra is a large group of musicians, made up of different instruments, that play music under the direction of a conductor.

Instrument Families

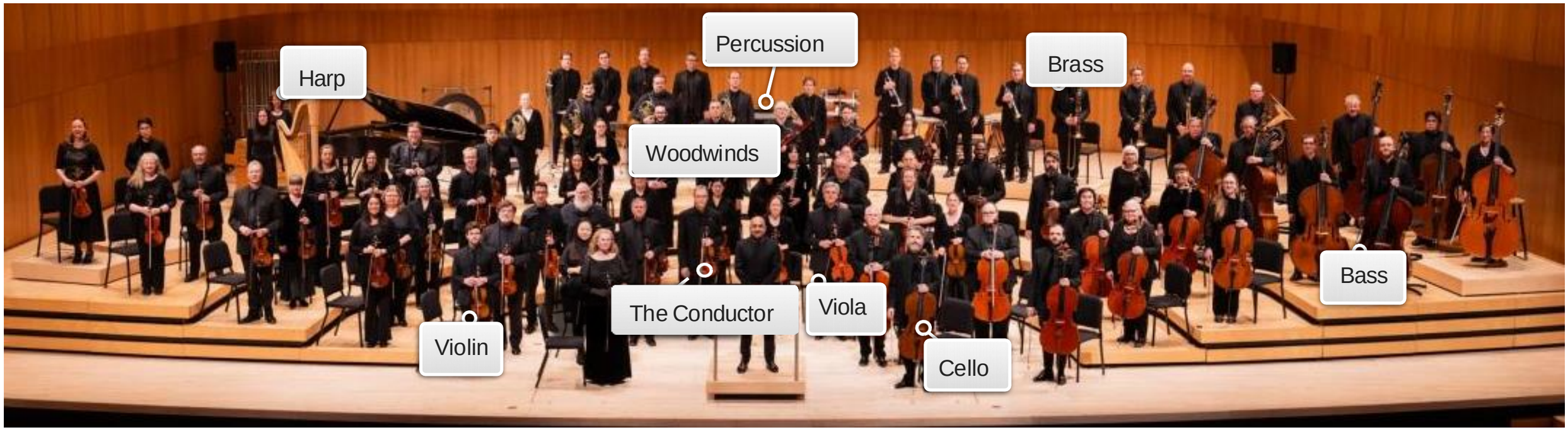
There are 4 instrument families in the orchestra. Each instrument belongs to one of the following families:

Strings, Woodwinds, Brass, or Percussion

How do Instruments Make Sound?

Instruments make sound through vibration. When something vibrates it makes a sound, and sends the vibrations out in all directions, like a wave. Because it is the air that is vibrating, you can't see it—but you can hear it! The rate of vibration is what causes instruments to have different pitch.

Meet the Orchestra!



Meet the Strings Family!

- There are **four instruments** in the **strings family**: the **violin**, **viola**, **cello** and **bass**. They look similar with their curvy wooden bodies and long necks, but they are all different sizes.
- String players use a bow, drawn across the strings, to make them vibrate. The vibrations echo within the body and produce sound. String players can also pluck the strings with their fingers.
- The **harp** is sometimes considered a part of the strings family because it has so many strings!

Meet the Strings Family!

Violin

- This is a violin!
- There are more violins in the orchestra than any other instrument!

Meet the Strings Family!

Viola

- **This is a viola! It looks a lot like the violin, but it is actually bigger!**

- **Because it's bigger, it can play low notes that the violin can't.**

Meet the Strings Family!

Cello

- **This is a cello! Doesn't it look a little bit like the violin, too? It is much bigger though.**

- **Musicians have to sit down to play the cello.**

Meet the Strings Family!

Bass

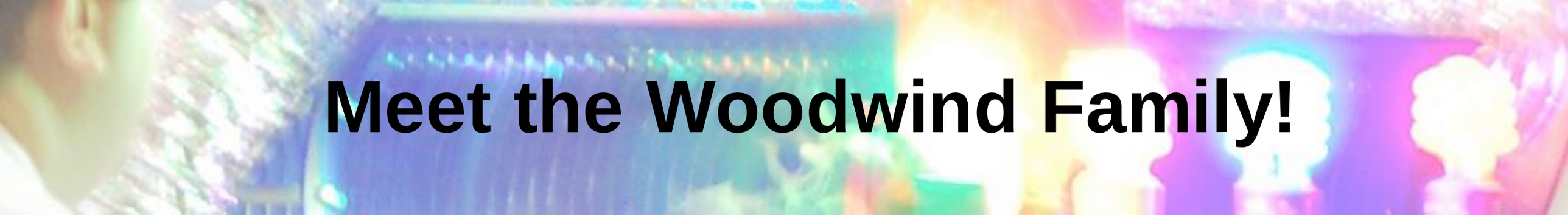
- **This is a bass! It's really big, probably bigger than you!**
- **The bass is so tall that it can only be played standing up.**

Meet the Strings Family!

Harp

- **This is a harp! The harp is different because it can belong to the string family AND the percussion family!**

- **The harp doesn't use a bow to make sound - harpists use their hands.**



Meet the Woodwind Family!

- The instruments in the woodwind family used to be made of wood, which is how they got their name. Today many of them are still made from wood, but some are also made of metal. These instruments have lots of different keys that help change the pitch and sound that the instruments make.
- Each woodwind instrument makes sound in a special way, but they all use wind - or air - to do it!
- Check out the woodwind instruments!

Meet the Woodwind Family!

Flute

- **The flute is played by blowing air across the hole in the mouth piece. This makes the air inside the flute vibrate and make sound.**

Meet the Woodwind Family!

Oboe

- The oboe is played by blowing through the tip, where two reeds are tied together. These reeds vibrate and make sound.

Meet the Woodwind Family!

Clarinet

- **The clarinet is played like the oboe. Instead of two reeds, it uses only one reed to make sound.**

Meet the Woodwind Family!

Bassoon

- Just like the oboe, the bassoon uses two reeds to make vibrations.
- Because it is so big, the bassoon makes a deep sound.

Meet the Brass Family!

- The instruments in the brass family are all made of a shiny metal, called brass - which is how they got their name! The instruments are made by twisting the metal into all sorts of shapes and sizes.
- Brass instruments have a mouthpiece that they use with their instruments. When the player blows air through the instrument using the mouthpiece, their lips vibrate. These vibrations travel through the metal of the instrument, which makes sound.
- Check out the brass instruments!

Meet the Brass Family!

Trumpet

- **The trumpet is the brass instrument that you can always hear!**

- **It makes a higher sound than the other brass instruments.**

Meet the Brass Family!

Trombone

- Trombones are played by sliding part of the brass “slide” in and out.
- This makes the instrument play higher and lower notes.

Meet the Brass Family!

Horn

- **The french horn is a round, curled-up instrument.**
- **The end of it is shaped like a large funnel and called the bell.**

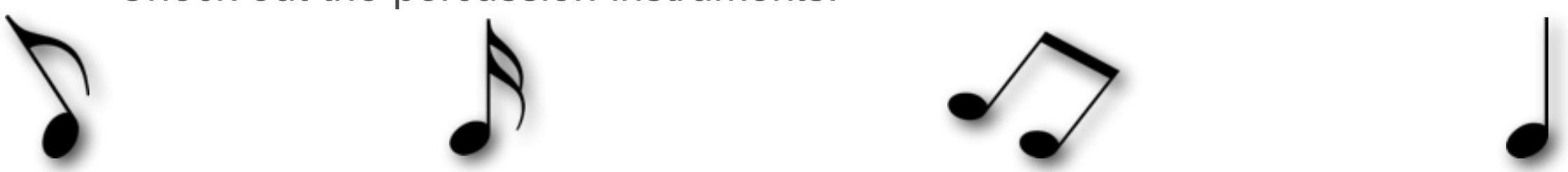
Meet the Brass Family!

Tuba

- The tuba is the lowest and biggest brass instrument.
- It supports the rest of the orchestra!

Meet the Percussion Family!

- The percussion family has a lot of different instruments in different shapes and sizes. Percussion instruments can either be **pitched** or **non-pitched**. Pitched instruments are able to play many types of notes. The piano, timpani, and xylophone are examples of pitched instruments. Non-pitched instruments can only play one note. The snare drum, bass drum, cymbals, and triangle are all non-pitched instruments.
- Percussion instruments can be played in many different ways, but the most common is to strike them with something. Usually percussionists use drum sticks, mallets, and even their own hands!
- Check out the percussion instruments!



Meet the Percussion Family!

Bass Drum

- **This is a bass drum. It makes a loud, low sound!**

Meet the Percussion Family!

Gong

- **The gong! This makes a loud, low sound when struck.**

Meet the Percussion Family!

Piano

- The piano! The piano is played with your hands. When you play the "keys" on the piano, there are strings inside that get hit by hammers. This is how it makes sound.

Meet the Percussion Family!

Timpani

- **The timpani are a pitched instruments, which means they can make sounds that are both high and low.**

Meet the Percussion Family!

Xylophone

- **The xylophone is played with mallets. Like a piano, it can play lots of high and low notes.**

Meet the Percussion Family!

Harp

- **The Harp, again!**
  The Harp can be considered a percussion instrument, because it is played with your hands!

Instrument Family Quiz

I’m a violin.

What family do I belong to?

A. Brass

B. Strings

C. Percussion

D. Woodwind

Instrument Family Quiz

I’m a snare drum.

What family do I belong to?

A. Brass

B. Strings

C. Percussion

D. Woodwind

Instrument Family Quiz

I’m a trombone.

What family do I belong to?

A. Brass

B. Strings

C. Percussion

D. Woodwind

Instrument Family Quiz

I’m an oboe.

What family do I belong to?

A. Brass

B. Strings

C. Percussion

D. Woodwind

Instrument Family Quiz

I’m a xylophone.

What family do I belong to?

A. Brass

B. Strings

C. Percussion

D. Woodwind

Chapter 4

Additional Resources

In this chapter, you will find:

- **The Science of Sound**
- **Conducting 101**
- **Arts Education Websites**
- **Post-Concert Reflection**
- **Pre/Post-Concert Activity Extensions**

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The Science of Sound

Objectives:

- Students will define vibration as when an item moves back and forth very quickly
- Students will explain that sound is produced through vibration

Procedure:

1. Ask students what they think is needed to make a sound and record their answers.
2. Ask students what they think “vibration” is and record their answers.

Experiment #1: Have students hold their two fingers lightly to their throat and hum. What can they hear and what can they feel? Record Answers.

Experiment #2: Each student receives a balloon with a small amount of rice inside of it. (Blown up and knotted.) Have students place balloon on their lips or cheek as they hum, or hold the balloon near a working speaker while music is playing. What can they hear? What can they feel? What can they see? What is happening to the rice? Record answers.

Assess and Explain:

As a group, redefine vibration and record your answers. Ask the question: “Is vibration necessary to create sound?” Explain that all sound is made through vibration and that these vibrations travel in waves.

Experiment #3: Gently strike a tuning fork and place it in a glass of water. What do you see? What do you hear? What happens if you stop the vibrations?

Experiment #4: String a rubber band between two pegs or nails. Ask the students to pluck it. What do you see? What do you hear? What happens if you stop the vibrations?

Final Assessments:

1. Ask students to create their own definition of vibration and sound.
2. Ask students to demonstrate how vibration produces sound.

Variation:

Set up the experiments as lab stations. Have your students work in rotating groups and record their findings.

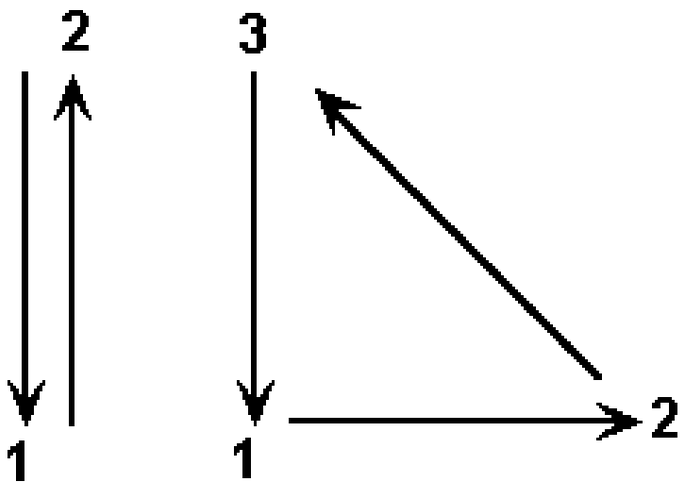
Conducting 101

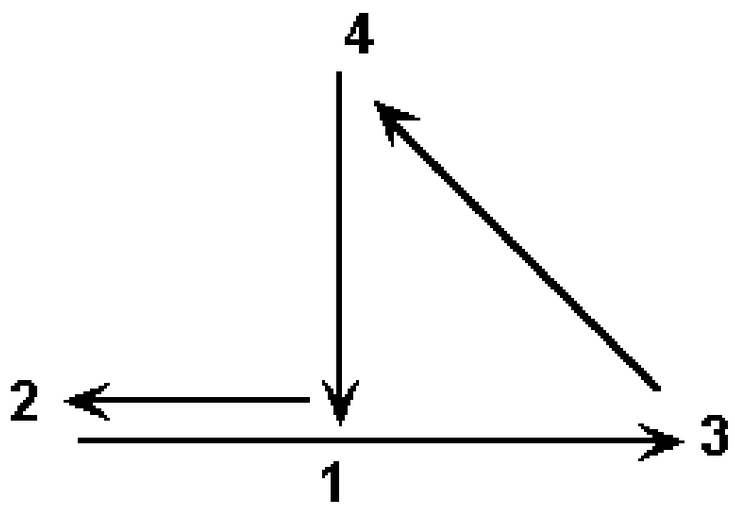
Have you ever put on music and pretended that you're leading the orchestra? Wouldn't it be fun to be a **conductor**?

A conductor leads the orchestra. Conductors need to know how the composer wanted the music to sound. The conductor must be a trained musician, know how to work with people in a group, and must be able to tell the musicians what he or she wants them to do by using a series of gestures.

To show the musicians what he or she wants them to do, a conductor 'draws' special shapes in the air with his or her baton, the stick used by the conductor to give musical directions, according to the number of beats in a bar.

Try drawing these shapes!





But a conductor does more than just beat time. What else might a conductor need to show the musicians with his/her gestures?

How fast or slow the music is.
How loud or soft the music is or if the music should get louder or softer.
When to start and stop playing.

Conductors also use their faces to show if the music should be happy, sad, scary, or even angry.

How to Conduct an Orchestra

Preparation:

Assemble enough “instruments” for each student. These can be simple percussion instruments, kazoos, or anything homemade or brought from home that will make a sound. You can also have students choose their own imaginary instrument to play and have them sing a song while they “play.”

You will also need something to use as a conducting “baton” - a pencil, pointer or short stick of some kind.

Procedures:

1. Gather students together and have each select an instrument.
2. Seat the students in a semi-circle.
3. Ask for a volunteer to conduct the group. Let the volunteer arrange various instruments together in sections if he or she likes.
4. As the student is conducting, have him or her experiment with the following:
   - Have different parts of the group play at certain times.
   - Have the group play louder or softer, faster, or slower.
5. Have students take turns playing instruments and conducting.

Discussion Questions:

1. What signals did the conductor use to communicate with the musicians?

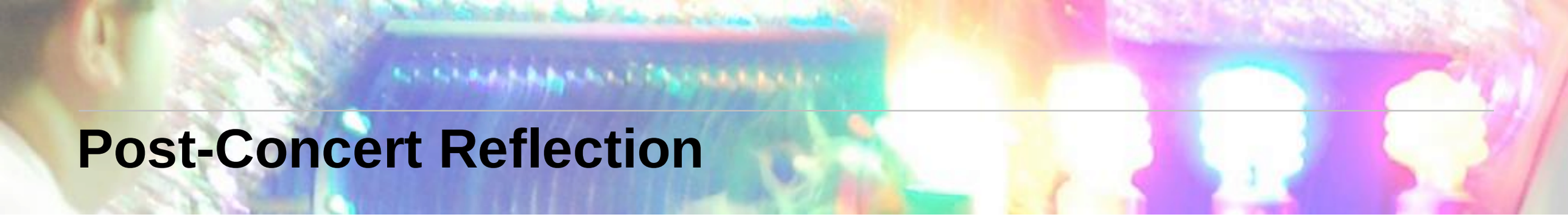
2. What did it feel like to be a musician? Was it easy or difficult to understand what the conductor wanted?

3. What did it feel like to be the conductor? Was it easy or difficult to communicate with the musicians? Did they do what you wanted them to do?

Arts Education Websites

We believe these are great resources for additional activities and information about the orchestra, its families, and music in general.

- The Dallas Symphony Orchestra's award winning site for kids.
- Carnegie Hall's Online Resource Center - Games and Listening Guides.
- Arts Edge - The Kennedy Center's Site for arts educators.
- The New York Philharmonic's educational website for children.
- The San Francisco Symphony's educational website.
- The Nashville Symphony's educational website.



Post-Concert Reflection

Summary & Reflection Questions:

The Concert:
- What did you think about the concert?
- What was your favorite part of the concert?

Instruments:
- What is an orchestra?
- What are the four instrument families?
- Define the instrument families. How do you know which instruments belong in which families?
- Name one or more instruments of each family.
- What is your favorite instrument or instrument family & why?
- Which instrument family does the voice belong to? Why?

Science of Sound:
- How is sound made?
- What is vibration?

Conducting:
- What is a conductor? What does the conductor do?
- What shapes does a conductor make with their hands or baton?
- Would you rather be the conductor or one of the orchestra members? Why?

Different ways to review:

- **Whole class discussion** (Q/A)
- **Basket-Ball** (answer correctly to shoot paper into trashcan)
- **Pair-Share** (teacher asks questions and partners share answers)
- **Ball Toss** (when the ball is tossed to you answer the question)
- **Quiz/Quiz/Trade** (prep flash cards w/ questions ahead of time; students walk around the room quizzing each other)
- **Bingo sheet** (one question per square – get initials of someone who knows the answer)
- **Flashcard sort** (prep pictures of instruments; students sort them into instrument families; done as a class or in small groups)
- **Jeopardy**
- **Four corners** (stand in the corner of your favorite instrument family; discuss characteristics & why you like it)
- **Draw to Show** (instrument family map, conductor patterns/purpose)
- **Other Games**

Pre/Post-Concert Activity Extensions

Embedded in the video titles are hyperlinks to YouTube. These videos are intended to further engage your students in their Omaha Symphony concert experience as pre- or post-concert activities!

George Meets the Orchestra | An Introduction to the Orchestra for Children *(6:30)*

- ☐ George chats with players of the Sydney Youth Orchestra and learns all about the four families of the orchestra – strings, brass, woodwind and percussion. A perfect introduction to classical music for kids aged 2-5.

Howard B. Wigglebottom Learns to Listen *(10:24)*

- ☐ The video is an audio book of Howard B. Wigglebottom Learns to Listen by Howard Binkow, with examples of how good listeners sit. It also features a fun sing-along song.

What is Timbre? *(1:47)*

- ☐ Introduction to beginner concepts of timbre by Berklee Online.

Sesame Street: People in Your Neighborhood -- Conductor *(4:03)*

- ☐ Murray Monster and Ovejita travel to Lincoln Center to join New York Philharmonic Music Director Alan Gilbert to find out just what a conductor really does.

3-year-old Jonathan conducting to the 4th movement of Beethoven's 5th Symphony *(4:28)*

- ☐ This young conductor is very expressive, moving his baton with the music.

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