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Welcome to the BSO Midweeks!

On behalf of the Associate Conductor, Nicholas Hersh, the members of the Baltimore Symphony Orchestra, and the BSO Education Department, we are delighted to welcome you to our 2019-2020 Midweek Concert Series. With the BSO’s Midweek Concert series as the longest running education initiative at the BSO (running since February 16, 1924), and the first regular educational concert series of any orchestra in the country, we are thrilled to have you join us here at the Joseph Meyerhoff Symphony Hall.

This Midweek Concert Season, we present four concerts Lemony Snicket’s The Composer is Dead, The Snowman, Classical Mash-Up!, and Through the Telescope. Each concert incorporates an Arts-Integrated, STEAM-Activated approach to create a relevant, interactive, and interdisciplinary experience.

About This Guide

On the next pages you will find the Teachers’ Guide for Through The Telescope, written by a highly skilled group of Maryland educators with specialism in Music, Drama, Science, English/Language Arts, and Visual Arts, led by award-winning curriculum writer and editor, Richard McCready.

At the start of the guide is a “Snapshot” of your concert experience. This will give you a sense of what to expect in the concert, along with some thoughts about the various curricular connections, and music we suggest you listen to in the classroom before the performance.

Beyond the Snapshot pages you will find a variety of activities, called “Lenses,” to signify the various directions that you can explore in order to prepare for this concert. Each Lens may be used in any order you wish. We have also highlighted the various cross-curricular links that align with each Lens so that you may jump to areas that are of particular interest to you and your students. We hope that your students try at least one activity prior to coming to the concert so they can make the most of their live experience at the Meyerhoff.

Each activity is written to encourage students’ natural sense of creativity and exploration. They will be able to read the activity pages or you can read the activities with them. Some of the activities are scientific, some are movement games, some employ and encourage art skills, and some involve storytelling and role-play. You best know your students, their capabilities, and their interests. You should encourage students to try the activities that you feel most appropriate for them and for your classroom. Encourage other teachers in your building to try some of the activities as well.
These guides are designed and intended as a mere starting point for exploration, with the essential piece being the work that is created by the student, for the student. Our ultimate goal is to facilitate a strong connection between the music performed by the BSO and the everyday lives of your students, so that they may continue to take music with them wherever they go.

*Be sure to check out the additional resource guide from the Space Telescope Science Institute with more online tools on exploring the wonders of the Hubble Telescope found online under the Midweek performance at bsomusic.org.*

*Please feel free to share your students’ work with us at the BSO—we love to see where the ideas from these activities might take your students and all the inspired, arts-integrated work they will produce in the classroom. If you wish to share any materials with us at the BSO, please send them to education@bsomusic.org.*

We hope you enjoy this guide, your explorations that are yet to come, the concert experience, and sharing your creative work with us.

Warmly,

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Below is the list of pieces that will be performed on the *Through the Telescope* Midweek Concerts. Please take a moment to listen to these pieces in advance of the concert on YouTube, Spotify, or iTunes.

- **HOLST:** “Mars” from *The Planets*
- **MOZART:** Symphony No. 41, “Jupiter,” I. Allegro vivace
- **HOLST:** “Uranus” from *The Planets*
- **LEE:** *Sukkot Through Orion’s Nebula*
- **HOVHANESS:** Symphony No. 48, “Vision of Andromeda,”
  II. Fugue
- **DEBUSSY:** *Claire de Lune*
- **WILLIAMS:** “Adventures on Earth” from *E.T.*
Orbiting the earth at 340 miles above the surface, the Hubble Space Telescope is cruising at 17,000 miles per hour gathering data about the universe and beyond. Lying outside the Earth’s atmosphere, the telescope can take pictures more clearly of galaxies and other objects in space giving a clearer view into the cosmos. The heavens above have inspired artists, writers, and musicians for thousands of years. In this concert, we explore how the symphonic repertoire has interpreted space and its relationship to what the Hubble Telescope has uncovered. Its images are responsible for providing unparalleled insight to scientists about what is out there beyond Earth.

Mozart is known for his prolific writing of symphonies, concerti, and countless other works of music. His Symphony No. 41 is nicknamed “Jupiter” not after the planet, but the planet’s namesake. Jupiter is the Ancient Roman god of the sky and thunder, the king of the gods, believed to be the protecting entity of the empire. The planet, like the god, embodied similar characteristics with its large size and prominent features. The nickname “Jupiter” came later from Johann Baptist Cramer, an English music publisher, who believed the opening chords reminded him of the god Jupiter and his thunderbolts. We know of Jupiter’s tumultuous storms with the help of imaging from the Hubble Telescope confirming man’s depiction of Jupiter. Can you hear the mighty godly sounds of the opening C major chords? Do you think this is an accurate depiction of our largest planet?

We know more about Uranus’ rings thanks to Hubble’s images of the planet. The inner system of rings consists mostly of narrow, dark rings, while an outer system of two more-distant rings, discovered by the Hubble Space Telescope, are constantly being replenished by the planet’s moons. Gustav Holst, an English composer, wrote an entire work between 1914 and 1916 titled The Planets, with a movement depicting each planet— including Uranus. Listen to see if you can hear how this gas planet is depicted by Holst, and what makes this work different than Mozart's depiction of Jupiter.

What is similar?

Andromeda Galaxy, the Milky Way’s closest neighbor, is a spiral galaxy with a mass believed to be larger than the Milky Way. The Hubble Telescope has photographed this galaxy as well, helping scientists to better understand our neighboring galaxy. The second movement of Hovhaness’ Symphony No. 48 "Vision of Andromeda,” is a fugue, a musical form in which themes are repeated and imitated in succession, with musical lines that seem to intertwine and spin much like a spiral galaxy does. See if you can hear the multiple lines overlapping between instruments and if you can hear the spiraling voices of the orchestra.

Debussy wrote Clair de Lune to represent the moon in the night sky. The slow, melancholic work, originally for piano, emulates the quiet repose of the night sky, again with open chords and a soaring melody to represent the moon. The Hubble Space Telescope took breathtaking images of details on the surface of our closest celestial object which we all know so well. The extreme detail the telescope can capture gives scientists an even better observational tool into the wonders of the moon’s surface. Can you picture a full moon in the night sky when listening to this piece?

Of course, a huge unknown answer is if we, on planet Earth, are alone in the universe. Extraterrestrial beings have long been fantasized in writing, movies, and visual art. For the movie E.T., John Williams wrote a fantastic score to accompany the film about an alien lifeform which lands on Earth and its quest to return home. Again, we are given the sense of heroism through the music to highlight the non-human characteristics of the alien and its journey home. Can you feel the power of the music guiding our lovable alien home?
Have you ever really looked at something? Really examined it? The Hubble Space Telescope let us see things in ways we never could before. Now imagine what it might be like for an extraterrestrial to view things on our planet for the first time. Let’s get ready to take a closer look at things around us!

Activity Ideas

1. View “Zoom Art” by Inditle [https://www.youtube.com/watch?v=KvLSWwXM03s](https://www.youtube.com/watch?v=KvLSWwXM03s)
   Watch as we zoom in from a tiny dot to a very specific point on our blue planet.
2. Create a viewfinder. Traditionally a viewfinder is a tool artist’s use to help in selecting a scene. Make one using a piece of 8½” x 11” paper. Cut a small hole in the middle of the paper.
3. Make new discoveries.
   - Start far away from an object.
   - Hold your paper in front of your eyes.
   - Close one eye.
   - Slowly move closer to the object until you are within one inch. How does this change what you see? How does this change your focus?

4. Choose 2 items in the room to draw from this close up perspective.

5. Switch drawings with 2 friends to see if you can find each other’s items.

6. Now let’s do this with Williams “Adventures on Earth” from E.T.
   https://www.youtube.com/watch?v=lRdom7v3GgE. Zoom in on what you hear. Here are some examples of what to listen for:
   - Can you hear different instruments?
   - What instruments have the melody?
   - What instruments are creating the mood of the music?

Resources

❖ “Zoom Art” by Inditle https://www.youtube.com/watch?v=KvLSWwXM03s
❖ Williams “Adventures on Earth” from E.T.
   https://www.youtube.com/watch?v=lRdom7v3GgE
Curriculum Connections
Fine Arts Standards

❖ Creating
  o 1: Generate and conceptualize artistic ideas and work.

❖ Responding
  o 7: Perceive and analyze artistic work.

❖ Connecting
  o 10: Synthesize and relate knowledge and personal experiences to make art.

Mathematics Practices

❖ M1: Make sense of problems and persevere in solving them.
❖ M5: Use appropriate tools strategically.

Science Practices

❖ S3: Planning and carrying out investigations.
When you look at the sky, what do you see? For centuries, people around the world have stared at the night sky and have seen constellations. A constellation is a group of stars that forms a particular picture in the sky and has been given a name. Let’s create our own constellations!

Activity Ideas

Connect the starry dots in a picture of the night sky to create and name your own constellation. Then put all your constellations together in the shape of a giant galaxy to display!

Right now, astronomers officially recognize 88 constellations: Here is a link to learn about each constellation in more detail.

https://www.constellation-guide.com/constellation-names/
4. Now you can turn your constellations into a galaxy! You will need to determine what shape you want your galaxy to be. There are three main shapes for the galaxies in our Universe: spiral, elliptical, and irregular.

Place your constellations in the shape of your galaxy. Decide if you want to group similar constellations together, or form a pattern, or just place them randomly.
Stand back and look at your Galaxy. Imagine that your giant galaxy is just one of the small dots of light in this photo that the Hubble Space Telescope took of one tiny piece of our universe.

You are one of the billions of people on our Earth. Our Earth orbits the Sun in our Solar System. Our Sun is one star among the billions of stars in the Milky Way Galaxy. Our Milky Way Galaxy is one among the billions of galaxies in our Universe. You are unique in the Universe!

An image of “deep space” from the Hubble Space Telescope. Each dot of light, even the tiniest one, is an entire galaxy!
Resources

❖ Find out more about galaxies here: [https://spaceplace.nasa.gov/galaxy/en/](https://spaceplace.nasa.gov/galaxy/en/)
❖ Make a Spiral Galaxy pinwheel: [https://spaceplace.nasa.gov/pinwheel-galaxy/en/](https://spaceplace.nasa.gov/pinwheel-galaxy/en/)
❖ [https://www.almanac.com/content/man-moon](https://www.almanac.com/content/man-moon)

Curriculum Connections

Fine Arts Standards

❖ Creating
  - 1: Generate and conceptualize artistic ideas and work.
  - 2: Organize and develop artistic ideas and work.
  - 3: Refine and complete artistic work.
❖ Performing/Presenting/Producing
  - 5: Develop and refine artistic work for presentation.
❖ Responding
  - 7: Perceive and analyze artistic work.

Mathematics Practices

❖ M4: Model with mathematics.

Science Practices

❖ S2: Developing and using models
❖ S8: Obtaining, evaluating, and communicating information
Lens Three: Explode and Implode a Musical Phrase

Have you ever moved in slow motion or fast forward? Have you ever watched a sports replay in slow motion or fast forward? In this activity, you will choose a phrase of music, and then increase or decrease the speed in order to determine the perspective of that phrase of the piece.

Activity Ideas

Johann Strauss Jr.’s piece *The Blue Danube Waltz* gives the listener the feel of river. In this exercise, you will take the main theme, explode (or augment) the phrase to half the speed, and implode (or diminish) the phrase to double the speed.

*Note this piece is no longer on the Midweek Program*
1. First, play a recording of *Claire De Lune*, or simply hum along! Next, hum the tune much more slowly (augment the theme). What does it sound like/feel like? Finally, hum the theme much faster (diminish the theme). What does it sound like/feel like?

2. Listen to the main theme and move with the speed of the music (tempo). Now pretend that you are moving in slow motion and augment the theme to half the speed. How does it feel? Finally, move very fast. How does it feel?

Try this idea with Gustav Holst’s “Mars”, or John Williams’ “Adventures on Earth” from *E.T.*

**Resources**

- *The Blue Danube* by Strauss: [https://www.youtube.com/watch?v=_CTYymbbEL4](https://www.youtube.com/watch?v=_CTYymbbEL4)
- “Mars” by Gustav Holst: [https://www.youtube.com/watch?v=cXOanvv4plU](https://www.youtube.com/watch?v=cXOanvv4plU)
- “Adventures on Earth” from *E.T.* by John Williams: [https://www.youtube.com/watch?v=g2dJtATZ9A](https://www.youtube.com/watch?v=g2dJtATZ9A)
Curriculum Connections
Fine Arts Standards

❖ Performing/Presenting/Producing
  o 4: Analyze, interpret, and select artistic work for presentation.

❖ Responding
  o 8: Interpret intent and meaning in artistic work.

❖ Connecting
  o 11: Relate artistic ideas and works with societal, cultural and historical context to deepen understanding.

English Language Arts Practices

❖ E7: They come to understand other perspectives and cultures.

Mathematics Practices

❖ M1: Make sense of problems and persevere in solving them.

Science Practices

❖ S8: Obtaining, evaluating, and communicating information.

Social Studies Practices

❖ SS1: Developing questions and planning inquiry.
The Hubble Space Telescope is one of NASA’s greatest achievements! Looking through a telescope helps the human eye to see things far, far away. Mankind has developed different “scopes” through the ages for viewing or observing something. One of these amazing tools is the kaleidoscope. A kaleidoscope is an instrument containing loose bits of colored material (such as glass or plastic) between two flat plates and two plane mirrors placed so that changes of position of the bits of material are reflected in an endless variety of patterns. Let’s see how this works firsthand!
Activity Ideas

1. Make your own kaleidoscope. There are several different sets of directions included in the resources that vary in degree of difficulty and use different materials. You might want to make more than one to see which DIY kaleidoscope works the best. Experiment with how the mirrors of the kaleidoscope are placed and how the kaleidoscope is put together to get differing results. Share your results with others.

2. Compare and contrast what you learn from this video from the Hubble Space Telescope https://www.youtube.com/watch?v=6F78PscbCqg and what you learned from making your own kaleidoscope.

3. Make this a full STEAM unit such as this one! http://www.heddenstainedglass.com/stem-curriculum/

Resources

Kaleidoscope resources:
- https://buggyandbuddy.com/science-for-kids-how-to-make-a-kaleidoscope/
- https://littlebinsforlittlehands.com/how-to-make-a-simple-kaleidoscope-for-kids/
- https://www.instructables.com/id/How-to-make-a-kaleidoscope-1/
- http://www.heddenstainedglass.com/stem-curriculum/

Hubble Space Telescope:
- https://www.youtube.com/watch?v=6F78PscbCqg
Curriculum Connections

Mathematics Practices

❖ M5: Use appropriate tools strategically.
❖ M6: Attend to precision.

Science Practices

❖ S1: Asking questions (for science) and defining problems (for engineering).
❖ S3: Planning and carrying out investigations.
❖ S4: Analyzing and interpreting data.
❖ S6: Constructing explanations (for science) and designing solutions (for engineering).
Lens Five: Move the Mars Rover!

Play a fun movement and improvisation game in which a group of “Programmers” and a “Rover” work together to accomplish a series of interesting and funny tasks in your room!
Activity Ideas

First, choose one volunteer to be the Mars Rover. If you like, they can even dress up as a fabulous traveling robot on another planet. Is there anything in the room that can transform them?

Then, have the Rover leave the room while their Programmers (everyone else!) decide on a series of simple and fun things they want the Rover to do with up to three objects in the room, such as “move the chair to a corner, sit on it, put a pencil on your head, and wave at the audience.” or “put the red hat on your right hand and turn in a circle, then put the hat on your other hand.”

Once the Programmers have decided on the program, it is time for the Rover to enter “Mars” and take commands from the programmers!

Now comes the fun part! The Programmers let the “Rover” know when it is close to completing the correct task by clapping or making some other kind of positive noise with their voices or instruments – you decide! The only rule is that there can be NO spoken words or negative feedback. For instance if the Rover moves close to the chair, applaud! If it picks up the chair, clap even louder! When the Rover completes its mission, there is HUGE applause!

How quickly can your Rover and Programmers work together to accomplish the mission?

Variations:

- Make the Rover out of two or three students who all have to remain connected to each other in some way.
- Blindfold the Rover!
- Have the Programmers sing or play an excerpt from one of the pieces on the concert for positive instead of clapping. The music can get louder or faster when the Rover is closer to completing the mission!
- Play with the ways in which the Rover can move when it enters the room. Can it bounce? Glide? Dance? Here’s a fun video of a new Rover in Development for Mars, the ATHLETE, busting a move!
- [https://www.youtube.com/watch?v=vwFrCpYavt4](https://www.youtube.com/watch?v=vwFrCpYavt4)
Resources

❖ You can discover more about ALL the Rovers that have explored planets and other celestial bodies in our Universe here:
https://spaceplace.nasa.gov/mars-rovers/en/

Curriculum Connections
Fine Arts Standards

❖ Creating
  o 2: Organize and develop artistic ideas and work.
❖ Connecting
  o 10: Synthesize and relate knowledge and personal experiences to make art

English Language Arts Practices

❖ E1: They demonstrate independence.
❖ E3: They respond to the varying demands of audience, task, purpose, and discipline.
A symphony orchestra is made up of many parts. How do all the parts come together to make the whole? Let’s take our telescope and see what it is like to be the conductor, and the musician.

Activity Ideas

An orchestra is made up of many instruments playing their own parts. Did you know that they can only see their own part? The only person that sees everything is the conductor! How does that work? Let’s explore the written part of music.

The orchestra will be playing “Mozart’s Jupiter” Symphony. Let’s take a look at what the conductor sees.
Wow! The conductor is reading 10 parts at the same time! How can you tell there are only 2 lines of music on this page? Look at the left-hand side and notice the bracket.

This marks what parts are playing at the same time.

But the musician does not see this! They only get to see what they have to play. Let’s look at just the Flute part. (Flauto) This is what they have in front of them.

Find the answers to the following questions in the full score:

1. Can you find just the timpani part? (sixth from the top)
2. What parts play the same rhythm at the same time? (flute, oboe and strings)
3. What section plays when the winds are resting? (Strings)
4. Do you see the falling notes just in the Second Violins and Violas?

Looking at the whole score this way makes it much easier to read, doesn’t it?

Now listen to what you see on the page. Can you now see how it really fits what they are playing?

https://www.youtube.com/watch?v=C6EOb86YdIs
Resources

❖ The Language of Conducting: https://www.youtube.com/watch?v=xcR1-WhjZys

Curriculum Connections

Fine Arts Standards

❖ Responding
  ○ 7: Perceive and analyze artistic work.

Science Practices

❖ S4: Analyzing and interpreting data.
Lens Seven: I’m a Nebula

A nebula is an interstellar cloud of dust. The beautiful colors that can be seen in a nebula come from the star in the middle of the nebula radiating light through the elements floating through the gas and dust within the clouds. Imagine if you were a nebula! What colors would the different parts of your life be?

Activity Ideas

1. On a piece of black construction paper use chalk pastel to create a self-portrait nebula. Ask yourself important questions like: Who is important to me? How does this person make me feel? What color represents this feeling and this person?
2. Be sure to choose colors that represent the important people, places and things in your life. For example, if you have a happy relationship with your sister maybe you would choose yellow to represent her.
❖ Turn your chalk pastel on its side and make cloud shapes starting in the center of your paper. Use a paper towel wrapped around your finger to smear the chalk pastel so it has the look of a cloud-like texture. Add a ring of a new color around the cloud. Again use the paper towel to smear the color. Be sure to use analogous colors - colors that are next to each other on the color wheel so that the colors will mix to a make a new color. Make more clouds and have them connect to each other.

❖ Now use a white chalk pastel and make white dots on your paper. Place an X on each dot creating a star. Use the paper towel and smear away from the center of the dot. This will make the stars look like they are twinkling. Make some bigger and some smaller. The larger stars will appear closer and the smaller stars will appear further away.

❖ Make sure to fill your composition, your paper to the edges. Add some long lines coming out of the middle of your nebula. Smear those with your paper towel to give them a more distant space look. Add a small amount of a color of your choice around the edges of your circles to give your stars a little bit of a 3-dimensional look.

Resources
❖ Click here to see and learn more about nebulae
https://www.nasa.gov/subject/6893/nebulae/
❖ Click here to learn more about analogous colors
https://www.thespruce.com/understanding-analogous-colors-1973820
Curriculum Connections

Fine Arts Standards

2. Creating
   1. 1: Generate and conceptualize artistic ideas and work.
   2. 2: Organize and develop artistic ideas and work.
3. Performing/Presenting/Producing
   1. 6: Convey meaning through the presentation of artistic work.
4. Connecting
   1. 10: Synthesize and relate knowledge and personal experiences to make art.

Mathematics Practices

1. M1: Make sense of problems and persevere in solving them.
2. M5: Use appropriate tools strategically.

Social Studies Practices

3. SS1: Developing questions and planning inquiry.
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