



Grade 4

Arts & Science Integrated Learning Sequence 2: Focus on Visual Arts and Music

([Jump to Learning Sequence #2 Teaching and Learning Plan](#))

INTRODUCTION

Arts Integration Model

This learning sequence is multidisciplinary, focusing on science, visual arts, music, and oral and written language. The arts standards are designed to cultivate artistically literate, creative, and capable students. The arts standards in this learning sequence are integrated with and supported by oral and written language standards.

Music



“Students in fourth grade strive to sing and play instruments with accuracy while improving and expanding on all levels of music literacy while creating, documenting, listening to, assessing, sharing, and performing music. As students continue music making, they create a deeper knowledge of all elements of music. Students also expand their abilities to read, write, and produce rhythm, melody, and harmony within given tonalities and meters. They identify and create music as a language and expressive art form while connecting and responding to specific personal and social ideas” [CA Arts Education Framework, Chapter 5](#)

Visual Arts



“Teachers of grade levels three through five design and implement units and lessons that provide opportunities for students to deepen their practice in self-direction, collaborative problem solving, observation, application of technologies for investigation, and setting purpose and goals in visual arts. Students continue to find personal meaning in their work and explore diverse methods of artistic investigation in preparation for artmaking. Students gain understanding and skills in applying criteria to discover how visual imagery conveys meaning. Fourth-grade standards call for further development of problem solving individually and collaboratively.” [CA Arts Education Framework, Chapter 7](#)

Science

Grade-four students ask questions about the forces shaping California’s landscape. Students observe weathering and erosion on their schoolyard. They develop and use a physical model showing how water moves earth materials from place to place. surface. Students use their model to discuss and design solutions that minimize erosion and protect property. In 4th grade students are expected to

Grade 4: Arts & Science Integrated Learning Sequence #2

observe that there are factors that affect the speed that landscapes change. In most of California, flowing water is the most common cause of erosion of soil and rocks. Students learn that erosion breaks material into smaller pieces and transports those pieces into new places.

English Language Arts

“Grade four is a milestone year for students as they make the transition from the primary to intermediate grades. A longer school day and a sharpened focus on content instruction require that students employ their literacy skills in ways that are increasingly complex and flexible.”

“In grade four, teachers ensure that the content standards for all subject matter (e.g., science, social studies, the arts) are addressed in depth—and, importantly, that every student has access to the content.” [CA ELA/ELD Framework, Chapter 5](#)

Learning Goals

- Students build understanding of erosion by constructing and testing a physical model.
- Students share their thinking orally and in writing.
- Students create an investigation plan using sketches and words.
- Students investigate erosion using a stream table.
- Students revise their plans based on feedback from others.
- Students revise their plans based on their observations and new ideas.
- Students examine photographs to explore how line, shape, color and texture can be used to identify land features on earth.
- Students explore art-making techniques.
- Students use standard or iconic notation to record original rhythmic patterns.
- Students respond to non-traditional text orally and in writing.
- Students reflect on their learning through discussion and written prompts.

Grade Four Standards

Grade 4 Standards Addressed AND Assessed	
California Arts Standards	Music:
	4.MU:Cr2b. Use standard and/or iconic notation and/or recording technology to document personal rhythmic, melodic, and simple harmonic musical ideas.
	4.MU:Cr1a. Improvise rhythmic, melodic, and harmonic ideas, and explain connection to specific purpose and context (such as social and cultural).
	4.MU:Cr1b. Generate musical ideas (such as rhythms, melodies, and simple accompaniment patterns) within related tonalities (such as major and minor) and meters.
	Visual Arts:
	4.VA:Re7.2 Analyze components in visual imagery that convey messages.
	4.VA:Re8 Interpret art by referring to contextual information and analyzing relevant subject matter, characteristics of form, and use of media.

Grade 4: Arts & Science Integrated Learning Sequence #2

Grade 4 Standards Addressed AND Assessed	
Science	4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. CCC. Cause and effect relationships are routinely identified and used to explain change. SEP. Obtain and combine information from books and other reliable media to explain phenomena.
English Language Arts Standards	Writing: Text Types and Purposes W.4.1 Write opinion pieces on topics or texts, supporting a point of view with reasons and information. a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer's purpose. b. Provide reasons that are supported by facts and details. W.4.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences. a. Orient the reader by establishing a situation and introducing a narrator and/or characters; organize an event sequence that unfolds naturally. d. Use concrete words and phrases and sensory details to convey experiences and events precisely. e. Provide a conclusion that follows from the narrated experiences or events. Writing: Production and Distribution of Writing W.4.4 Produce clear and coherent writing (including multiple-paragraph texts) in which the development and organization are appropriate to task, purpose, and audience. W.4.5 With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grade 4.)

Grade 4 Standards Addressed but NOT Assessed	
California Arts Standards	Visual Arts 4.VA:Cr2.1 Explore and invent art-making techniques and approaches. 4.VA:Cr2.2 When making works of art, utilize and care for materials, tools, and equipment in a manner that prevents danger to oneself and others.
Science	4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
English Language Arts Standards	Range of Writing W.4.10 Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. Speaking and Listening: Comprehension and Collaboration S.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

Grade 4: Arts & Science Integrated Learning Sequence #2

Domain Specific Vocabulary

In this learning sequence, domain specific vocabulary is introduced after students have an opportunity to explore and the need to name objects and concepts arises naturally in the classroom. As the vocabulary is explicitly introduced, it is recommended that the words are added to a Word Wall. For more information on the benefit of using Word Walls, consider these resources: [Tools for Teachers | Accessibility Strategy Word Wall](#) and [Word Wall | Learning for Justice](#). Domain specific vocabulary will be notated in **bold**.

Assessment Opportunities included in this Learning Sequence

Designing Assessment of Arts Learning is a process of eliciting and analyzing data for the purpose of evaluation. The assessment of student learning involves describing, collecting, recording, scoring, and interpreting information about performance. A complete assessment of student learning should include measures with a variety of formats as developmentally appropriate (NCCAS 2014). Formative and summative assessment must be included to make learning meaningful and effective. There are many types of formative and summative assessments, such as formative teacher-created diagnostic assessments and summative portfolios.

Importantly, the standards recommend that language and literacy learning be connected with the academic disciplines from the earliest grades onward. Assessment, then, should enable educators to determine a student's trajectory in developing proficiency in language and literacy within and across the years and the disciplines. (CA ELA/ELD Framework page 821)

Teachers should use a range of assessments to support learning. Assessments should affirm students' ways of knowing and provide students with multiple opportunities to demonstrate growth and mastery of learning in the arts discipline and science concepts while applying literacy and language skills.



Formative

- Discussion and written responses to prompts
- Revision of work based on feedback
- Initial design plans
- Self-reflection prompts



Summative

- Final art pieces
- Design and build and revise a physical model

ATTENDING TO EQUITY

CA Arts Education Framework

Effective arts education is equitable and inclusive; it thoughtfully implements the California Arts Standards in grade levels TK–12 and supports all students in

Grade 4: Arts & Science Integrated Learning Sequence #2

developing their artistic voice while becoming prepared for college and their career. Authentic and meaningful arts learning requires that all students have access to arts education programs that are supported by districts' families and communities, have been carefully planned and implemented, and are continuously evaluated for improvement. CA Arts Education Framework page 706

CA Science Framework

The vision of the CA NGSS is 'all standards, all students' Science and engineering education should be designed and taught in such a manner that every student, regardless of background or learning characteristics, has access to and benefits from deep and engaging science and engineering learning opportunities.

There is growing evidence that the intentional integration of art and design with STEM disciplines, or science, technology, engineering, arts, and mathematics (STEAM), develops students' motor, decision-making, and problem-solving skills. Connecting STEM instruction to the arts and design can spark creativity for teachers and students alike. Teachers can meaningfully and authentically integrate arts standards in STEM lessons and projects where the standards most naturally align. (Riley 2013; Jolly 2014) A study by the National Endowment for the Arts (2012) states that socially and economically disadvantaged children and teenagers who actively engaged in the arts were more likely to participate and succeed in school, graduate from high school, and enroll in college. Americans for the Arts compiles data that shows that children and youth participating regularly in the arts, regardless of their socioeconomic status, develop skills that transfer to other content areas; they also tend to have improved academic performance and lower drop-out rates. CA Science Framework Ch 10.

CA ELA/ELD Framework

Among the core principles guiding the development of this ELA/ELD Framework is that schooling should help all students achieve their highest potential. To accomplish this, students need to be provided equitable access to all areas of the curricula; appropriate high-quality instruction that addresses their needs and maximally advances their skills and knowledge; up-to-date and relevant resources; and settings that are physically and psychologically safe, respectful, and intellectually stimulating. CA ELA/ELD Framework page 880

Culturally and linguistically responsive teaching and equity- focused approaches emphasize validating and valuing students' cultural and linguistic heritage— and all other aspects of students' identities— while also ensuring their full development of academic English and their ability to engage meaningfully in a range of academic contexts across the disciplines. CA ELA/ELD Framework page 917.

LEARNING SEQUENCE 2: TEACHING AND LEARNING PLAN

Use the instructions below with the 4th Grade Arts & Science Integrated Unit [slides for Learning Sequence 2](#).

Grade 4: Arts & Science Integrated Learning Sequence #2

Part 1

Instructions for Part I	Teacher Notes
(SLIDE 2) Have students look at the photographs and respond: • What do you notice? • What do you wonder? (SLIDE 3) Share with students Movement happens all around. As we observe movement in nature we can look for evidence of change. Using photographs can help us notice changes over time. Ask students to share their initial thinking: Use the photographs above as you answer these questions with a partner: • How do you think the land formations in the images changed over time? What may have caused the changes? Have students share their initial thinking. Consider recording student thinking on a class chart to revisit later. As we continue to explore how earth changes over time, our goals for this lesson are to: • Share our thinking orally and in writing. • Create an investigation plan using sketches and words. • Investigate erosion using a stream table. • Revise our ideas based on feedback from others and our own new ideas. (SLIDE 4) Share with students A landform is a feature on Earth's surface. Erosion is caused when soil, rock, or other materials are removed from the earth's surface and moved to another location. Ask students: • What variables affect the erosion of earth materials? Add student thinking to the class chart. (SLIDE 5) Our goal is to learn how erosion affects the earth. Let's investigate erosion using a stream table. Materials we will need include: • Rectangle pan or tub • Cup • Scissors • Water • Earth materials; Sand, potting soil, small rocks • Small plastic or wooden objects (to represent natural and human-made structures, such as trees or houses) (SLIDE 6) Let's set up our experiment. As a group, discuss your earthscape plan.	In 4th grade students are expected to observe that there are factors that affect the speed that landscapes change. In most of California, flowing water is the most common cause of erosion of soil and rocks. Students learn that erosion breaks material into smaller pieces and transports those pieces into new places. Materials (per student group - 3-4 students per stream table) • metal pan or plastic tub • plastic or paper cup • Scissors • Water • Sand, potting soil, or dirt • Small plastic or wood objects (to represent natural and human-made structures, such as trees or houses) Safety Note: Some students may be sensitive to sand or soil mixture. Gloves should be worn. Add erosion to the word wall or chart. Watch this short episode of SciShow Kids to find out how to investigate erosion by setting up and conducting your own experiment with students.

Grade 4: Arts & Science Integrated Learning Sequence #2

[illegible]

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part I	Teacher Notes
What connections can be made between how the water and the earth materials interact in the spots we investigated (or at the beach in the video) and the impact of the water in our stream table experiments? (SLIDES 11–13) Ask students to discuss in their stream table groups: • How might you revise your experiment to test some of your new ideas about erosion? Allow time for students to test some of their ideas. (SLIDE 14) Share with students: Let's watch this DragonFlyTV Rivers segment to learn more about how the movement of rivers changes the land. As you watch the video, think about these questions and write down new ideas you have for each question: • How does the movement of water affect the land? Why is it helpful to control a river?	If students need additional support in answering the prompts provided, consider using this additional resource from Science Trek on PBS Learning Media.

Grade 4: Arts & Science Integrated Learning Sequence #2

Part 2: Extending Our Science Learning Through Photography

Instructions for Part 2	Teacher Notes
(SLIDE 15) Share with students: In earlier lessons, we looked at how photography is used to capture images of nature, individual people, and events and moments in time as they happen. We curated photos to tell a story and investigated how erosion can change the earth's surface. In this lesson, we will look at how photography can be used to help us learn new things about earth. (SLIDE 16) Share with students: Art and science have a lot in common. Artists and scientists make close observations to make sense of what they're studying. Artists use line to convey movement and mood. Geologists are scientists who study the materials that make up Earth and the processes that formed them. Geologists look closely at lines, shapes, colors and textures to do their jobs. Scientists see these features not just from the ground, but also in images taken from space – a process called remote sensing. Remote sensing images are taken with special instruments and cameras from high above Earth. They reveal information we may not be able to see from our perspective on the ground. (SLIDE 17) In this lesson, our goal is to examine photographs taken from space to explore how elements of art such as, line, shape, color and texture can be used to identify land features on earth. Show the images and have students discuss the following questions: • What types of lines and shapes do you see? • What type of movement or motion do the lines and shapes convey? • What feelings do the lines and shapes evoke? (SLIDES 18–19) Ask students to work in triads to look at each image again and identify signs of erosion and other land features based on the line, shape, color, and texture they notice. (Image Source: NASA, JPL, Art and the Cosmic Connection Project) (SLIDE 20) Have each triad pair up with another triad and share their observations and explanations. Provide discussion stems as needed. We noticed _____ so we think maybe it's a _____. This element (circle, blob, straight line, squiggle line) made us think this is a _____. We noticed _____, so we think it may be _____.	Adapted from: NASA JPL Explore Earth and Space with Art—Now Including Mars! Add photography to the word wall or chart. Add line to the word wall or chart. Possible discussion points to mention if not brought up by students: • circular shape may be a crater formed by a meteor • straight line might be an earthquake fault • squiggly line could be a meandering river Add shape, color, and texture to the word wall or chart. Consider sharing these examples from EarthKAM: • show how geographic features are identified and labeled by NASA scientists in an image of San Jose, California Thumbnail images of twenty features and patterns that are commonly found in images of Earth's surface Earth Features Seen From Space pdf Use discussion stems taken from the Beetles Project I notice, I wonder, It reminds me of Exploration Routine I notice (Making Observation) I wonder (Asking Questions) It reminds me of (Making Connection) So, I think maybe (Constructing Explanations)

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 2	Teacher Notes
Next, ask students to select an image and make close observations using the <i>Elements of Art and Their Geology Matches</i> handout. (SLIDE 21) Share with students: This unique perspective of how earth changes over time comes from astronauts on the International Space Station and from satellites high in Earth's atmosphere. Pictures from space help us see how natural processes and human activity impact and change Earth over time. (SLIDE 22) Watch the video of astronaut, Randy Bresnik, talking about his passion for photography and explaining how photography helps us learn about Earth from space. As you watch, listen for Randy's answers to these questions: • How did Randy's passion for photography begin? Why does Randy Bresnik feel it's important to take pictures in space? (SLIDE 23) Just like Randy Bresnik, astronaut Sally Ride loved the view of Earth from space and wanted to share it with others. Looking out the window of the space shuttle, Sally was amazed by the view of our beautiful planet. She wanted to share that view with young people all over the world. Sally had a thought! What if students could snap images of different places on Earth using a camera that NASA put in space? (SLIDE 24) Sally talked with other people at NASA and started the KidSat (short for Kid Satellite) program in 1995. The KidSat camera flew on space shuttle flights before moving over to the International Space Station in 2001. NASA renamed the program Sally Ride EarthKAM in 2013. Sally Ride EarthKAM supports about four active missions a year and has an image gallery of over 20,000 pictures taken by students just like you. The pictures we used earlier to identify land features were taken during EarthKAM missions by students just like you. (SLIDE 25) Read the NASA biography Who Was Sally Ride? • What were some of the things Sally liked to do for fun? • What did Sally do after she worked at NASA? • How do you think Sally felt being the first woman to fly in space? (SLIDE 26) Share with students: We can learn about how people affect Earth by studying satellite photos. Study the two images of Lake Chad in Northern Africa taken by NASA 35 years apart and answer the six questions on the Incredible Shrinking Lake Student Handout from Sally Ride EarthKAM. • What are the features in the pictures? • What is similar in these pictures? What is different?	Consider registering your class to participate in a Sally Ride EarthKAM mission. Active missions allow you and your students to follow the orbital tracks of the International Space Station and select times and longitude and latitude coordinates to capture an image from the digital camera that is part of the permanent payload on the ISS. This is a free opportunity you and your students will never forget. You may also consider visiting Visible Earth or The Blue Marble collection to share additional images from the NASA image archive. Teacher Background: Sally Ride – First American Woman in Space Consider sharing with students if they want to know more after reading the Who Was Sally Ride? article written for kids. Download the Incredible Shrinking Lake Teacher Guide and Incredible Shrinking Lake Student Handout activity. Both documents are available from the How People Have Affected Our Planet section of the Sally Ride EarthKAM activities webpage:

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 2	Teacher Notes
• What caused the difference? • What impact will the change in the lake have on the area? • What will happen if the change continues? • If you didn't have photos from space, how could you measure the changes in Lake Chad?	If you are not able to have student participate in an active Sally Ride EarthKAM mission, consider having them explore the Image Gallery.

Grade 4: Arts & Science Integrated Learning Sequence #2

Part 3: Creating Visual Art from Photographs

Instructions for Part 3	Teacher Notes
(SLIDES 27–29) Share with students: Let's create some art of our own. Our goal in this lesson is to explore art-making techniques. We will use the elements of art to create an original piece using paints and other mediums. Select one of the NASA or EarthKAM images to work from. We have white art paper and liquid and powdered tempera paint to start us off. What other mediums or objects might we want to use? Decide which other mediums will be made available. Ask students to pay special attention to the Elements of Art they used earlier when they were identifying geologic features of Earth. Remind students they do not have to make their artwork look exactly like their image. They are making art and should feel free to interpret their image any way they would like. They may choose to alter the composition, they may crop the image and only include one feature, they may add or change the colors, or alter the orientation. Their imagination is a guide. Have students discuss how they will use their selected image to inspire their artwork. Once students have an initial plan, handout the white art paper and let students select their materials. (SLIDE 30) After the art is complete and is in the process of drying, have students create a title for their work of art. Consider how you the audience would know about your work if you weren't present to tell them about it. • What would you like the audience to know about your art? • Does the work of art tell a story? • How would you like the audience to feel when looking at your art? Once the art has had a chance to dry, create a gallery exhibit displaying student art with the Earth from space image that inspired the artwork. (SLIDE 31) Ask students to make observations about what strikes them about the artwork, utilizing the elements they've been exploring such as line, shape, color, texture, and movement. Students can leave their thoughts on sticky notes for the artist. (SLIDE 32) Have students reflect on the process of creating their art and responding to the art works of others.	Other mediums or objects may include but are not limited to: pencils, pens, crayons, markers, chalk, pastels, glue sticks, sand, torn paper, tape, string, etc... make these available to students if possible. This video has information on 5 of the most common media used in elementary school arts. This video shares techniques for caring for art materials.

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 3	Teacher Notes
Have students reflect on their learning by sharing something new they have learned about science or art. Have students sit or stand in a circle. Go around the circle and have each student share their new learning.	

Grade 4: Arts & Science Integrated Learning Sequence #2

Part 4: Exploring Music in Space

Instructions for Part 4	Teacher Notes
(SLIDE 33) Share with students: In addition to taking photos in space, astronauts explore their other talents and interests as well. Many astronauts enjoy playing instruments while in space. Our goals in this lesson are to share our thinking, revise our work based on feedback from others, and to use standard or iconic notation to record original rhythmic patterns. (SLIDES 34–35) Share with students: You will have the opportunity to create your own music in this lesson. Knowing some of the elements of music will help you be more confident in creating music. Watch Elements of Music to learn more about dynamics, harmony, pitch, melody, beat, and timbre. (SLIDE 35) Share with students: For many astronauts, bringing music to the ISS keeps them active and connected to home. Astronaut Chris Hadfield loves singing and playing the guitar at home and in space. (SLIDES 36–37) Ask students: Watch Music Monday Comes to Space (04:51-09:17) to see him singing and playing the guitar. As you watch Chris, note any patterns and how you would describe the use of the elements of music in the song. Use a 2-column chart to organize your ideas and jot down your responses (SLIDE 37) Chris isn't the only astronaut that brings their instrument with them into space. Katy Coleman loves playing the flute. She participated in the first ever space and Earth duet when she played with Ian Anderson from the band Jethro Tull. Ask students: Watch space and Earth duet (04:51-09:17) to see her playing the flute. As you watch, note any patterns and how you would describe the use of the elements of music in the song. Please use the same chart to organize your ideas and jot down your responses. (SLIDE 38) Share with students: We have learned that some astronauts play instruments in space and here on Earth. An astronaut is someone who is trained to travel in space. A musicologist is someone who studies music. In 1914, two musicologists created a system for classifying musical instruments called the Sachs-Hornbostel system. Instruments are put into categories based on where the vibration takes place and produces the sound.	Music in space Teacher Background Lyrics of the Chris Hadfield song <i>Is Somebody Singing</i>: Learn more about playing music and producing sound in space. What actually happens when you play a musical instrument in space? - Classic FM Add dynamics, harmony, pitch, melody, beat, and timbre to the word wall or chart. Provide access to multiple musical instruments for pairs to explore. Consider these items: ● Xylophone with mallet ● Wooden fish with mallet ● Hollowed wooden block with mallet ● Wooden caterpillar ● Bell stick ● Wrist bells ● Wooden flute ● Maracas ● Shaker eggs

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 4	Teacher Notes
(SLIDE 39) Let's explore some instruments and see how they make sound. <i>Hand out instruments to pairs of students.</i> Share with students: Explore where the instrument vibrates and how the instrument produces sound. <i>After students have explored their instruments for a few minutes, call them back together.</i> Share with students: Read the definitions on the Classifying Musical Instruments handout. How would you classify the instrument you are exploring? How do you think your instrument is creating sound? Is it an aerophone, idiophone, chordophone, membranophone, or electrophone? What evidence did you use to make the classification? (SLIDE 40) Share with students: Now that you have classified your instrument, let's use the instruments to create music. Step #1: Using one instrument, create a pattern that is 8, 16, or 32 counts long. Step #2: Use symbols to represent your pattern. If you know standard notation for writing music you may use it. Create your own iconic notation, use a graphical representation of music, for your pattern that someone who can't read music would be able to follow. Step #3: Play your pattern with the instrument you selected. Step #4: Share your pattern with someone else. Play the pattern together. (SLIDE 41) Give each other feedback about your patterns using the following prompts: • Was the notation easy to understand? • How challenging was it to play the pattern after some practice? • What suggestions do you have to make the pattern better? (SLIDE 42) Play your pattern on two different instruments. What did you like about your pattern? Did your pattern sound better on one instrument compared to the others? What would you change about your pattern and why? Change or revise your pattern and play your instrument(s) again.	• Tambourine • Triangle with striker • Castanets • Chime bar Add aerophones, idiophones, chordophones, membranophones, and electrophones to the chart or word wall. Consider providing another opportunity for students to explore music: Share with students: Let's explore music another way, using the Chrome Music Lab Song Maker Experiment: Chrome Music Lab Song Maker is part of Chrome Music Lab. Each Chrome Music Lab Experiment allows students to explore music and sound in a different way.

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 4	Teacher Notes
(SLIDE 43) Create two separate patterns for two separate instruments. Play your patterns with two instruments at the same time or have someone else play along with you. What do you think about how the patterns played simultaneously sounded? Is there anything you would change about one or both of the patterns you created? (SLIDE 44) Create patterns for additional instruments. How many can you play at one time? What do you notice about the sounds of the instruments when played together versus played individually? (SLIDE 45) Have a class music performance. Ask each student to perform their pattern(s) alone or in a small group. Before starting the performance, determine audience etiquette such as listening quietly during the music and clapping once the music is completed by each individual or small group. Share with students: As a class, determine how you as the audience will act while you are watching and listening to one another perform. Will you move to the music during the performance? Will you clap or tap to the beat of the music during the performance? Will you sit still and in silence until the music stops and then clap for each performer? Different venues and types of music call for different audience etiquette so if the music calls for clapping along, singing, or chanting along then that is great. The important thing is to agree on what the etiquette should be in the situation and ensure the students are aware of it and follow along.	Add audience etiquette to the chart or word wall.

Grade 4: Arts & Science Integrated Learning Sequence #2

Part 5: Connecting to Ourselves

Instructions for Part 5	Teacher Notes
(SLIDE 46) Share with students: Just like all of us, astronauts are unique and have different interests. Music isn't the only way astronauts relax and take a break on the ISS. In 2011, Japanese astronaut, Satoshi Furukawa assembled Legos he brought to the ISS. Watch as he assembles the International Space Station Lego Set while on the International Space Station. (SLIDE 47) Ask students: What talents and interests would you want to bring with you if you were going to stay on the International Space Station (ISS)? Have students share. (SLIDE 48) Let's watch a short video to get to know one more astronaut, Leland Melvin. Leland is a former athlete and astronaut with many interests. (SLIDE 49) Let's watch a short video to get to know one more astronaut, Leland Melvin. Leland is a former athlete and astronaut with many interests. Ask students: Think about your story. • What are you curious about? • How are you creative? (SLIDE 50) Explore Leland Melvin's STEAMography webpage. Choose one of the eight videos in the <i>Explore More</i> section. Watch the video and jot your thoughts in your notebook: • Record the title of the video you chose. • Write down one new fact you learned. • If you could ask Leland Melvin a question, what would you want to ask him? (SLIDE 51) Select a partner that watched a different video than you chose. Share your thinking with your partner. Use these discussion frames to get you started: • The title of the video I watched is _____. • I learned... • A question I would like to ask is... Share with students: Peoples' identities are similar in some ways and different in others. Think about how you are similar to and different from the astronauts we have met throughout this learning sequence; Randy Bresnick, Sally Ride, Chris Hatfield, Katy Coleman, Satoshi Furukawa, and Leland Melvin. What is one thing you have in common with at least one of the astronauts? How are your identities similar? What is one thing that is different? How are your identities different?	Additional resources related to Legos in space: Legos in Space (Time for Kids) NASA's Artemis Mission: Taking STEAM to new heights! (Lego Education) Consider submitting students questions to Leland on the Contact page of his website. Consider reading Chasing Space Young Readers' Edition – HarperCollins aloud to the class. Meet Leland Melvin—football star, NASA astronaut, and professional dream chaser. Learn about Leland Melvin's remarkable life story, from being drafted by the Detroit Lions to bravely orbiting our planet in the International Space Station to writing songs with will.i.am, working with Serena Williams, and starring in top-rated television shows like <i>The Dog Whisperer</i>, <i>Top Chef</i>, and <i>Child Genius</i>. Leland's story introduces readers to the fascinating creative and scientific challenges he had to deal with in space and will encourage the next generation of can-do scientists to dare to follow their dreams. Consider connecting to student identity as a scientist with resources from Learning for Justice. Who, Me? A Scientist? Learning for Justice

Grade 4: Arts & Science Integrated Learning Sequence #2

Instructions for Part 5	Teacher Notes
Share with students: Reflect on your thinking, learning, and work throughout this learning sequence. • What were you most proud of? • Where did you encounter struggles, and what did you do to deal with it? • What about your thinking, learning, or work brought you the most satisfaction? Why? • How were you curious throughout the learning sequence? • What new skills and/or information did you learn?	

Learning Sequence #2 Reflection

Instructions for Reflection	Teacher Notes
(SLIDE 52) Share with students: Reflect on your thinking, learning, and work throughout this learning sequence. • What were you most proud of? • Where did you encounter struggles, and what did you do to deal with it? • What about your thinking, learning, or work brought you the most satisfaction? Why? • How were you curious throughout the learning sequence? • What new skills and/or information did you learn?	It is important for students to self-reflect on their learning prior to moving to Learning Sequence #3. Consider letting students choose which questions they respond to. Provide multiple means of expression for student self-reflection: • written responses • draw pictures • record verbal responses • discuss with partner • student choice