



#4 Light and Sound HTWW (23-24)

Duration: 6 Weeks, 6 hours
Unit dates: 23rd Aug 2023 - 4th Oct 2023
Subjects: Language, Science, English, Music
Grades: 1

Planning



Transdisciplinary theme

How the world works

Transdisciplinary theme focus

- how humans use their understanding of scientific principles
- the natural world and its laws



Central idea

Exploring light and sound can help us understand scientific principles and the world around us.



Learner profile attributes

Inquirers, Thinkers



Key concepts

Function, Connection, Form



Related concepts

Concepts

- **Function:** efficiency
- **Connection:** investigations
- **Form:** scientific principles



Lines of inquiry

- The scientific principles of sound and light (scientific principles, form)
 - How light and sound are used in daily life (efficiency, function)
 - The way scientists plan investigations to learn and solve problems (investigation, connection)
-



Approaches to learning

Thinking Skills

Thinking Skills

Thinking Skills (General)

Teaching the ATL skills

Thinking skills as students will inquire to gain understanding.

Relationship Skills SEL Journeys



Learning goals and success criteria

Key standards:

1-PS4-1. Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.

- Plan and conduct an investigation
- provide evidence that vibrating materials can make sound
- provide evidence that sound can make materials vibrate

1-PS4-4. Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance

- design a device that uses light or sound
- device solves a communication problem

Know

vibrations cause sound

light makes it so we can see things

different objects let different amount of lights pass through

light and sound can be used to communicate communicate



Subject standards

Music

Connecting

Connect

- MU:Cn11.0.1a - Demonstrate understanding of relationships between music and the other arts, other disciplines, varied contexts, and daily life. *(MU:Cn11.0.1a)*

Responding

Select

- MU:Re7.1.1a - With limited guidance, identify and demonstrate how personal interests and experiences influence musical selection for specific purposes. *(MU:Re7.1.1a)*

English

Reading: Literature

Key Ideas and Details

- CCSS.ELA-LITERACY.RL.1.3 - Describe characters, settings, and major events in a story, using key details. *(CCSS.ELA-LITERACY.RL.1.3)*

Craft and Structure

- CCSS.ELA-LITERACY.RL.1.4 - Identify words and phrases in stories or poems that suggest feelings or appeal to the senses *(CCSS.ELA-LITERACY.RL.1.4)*

Writing

Production and Distribution of Writing

- CCSS.ELA-LITERACY.W.1.5 - With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed. *(CCSS.ELA-LITERACY.W.1.5)*

Science

Engineering Design

Analyzing and Interpreting Data

- K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Waves and their Applications in Technologies for Information Transfer

Planning and Carrying Out Investigations

- 1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
- 1-PS4-3 Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light.

Constructing Explanations and Designing Solutions

- 1-PS4-2 Make observations to construct an evidence-based account that objects can be seen only when illuminated.
- 1-PS4-4 Use tools and materials to design and build a device that uses the light or sound to solve the problem of communicating over a distance.



Prior learning

Class discussion after provocations to assess students' prior knowledge. Teachers will look for evidence of light and sound vocabulary (vibration, beam, loud, soft, illuminate). Students will observe and write about vibration experiments. Teachers will look for evidence whether students notice the source of the vibrations.



Connections: Transdisciplinary and past

Library-students will explore nonverbal communication, light and sound through literature. Read Drawn Together. Watch the following on Discovery Education A First Look- Sound, What is Light?, The Language of Science: Sound Light and Color, Paul the Penguin- Designing for Communication and Helen Makes a Breakthrough.



Teacher questions

How light and sound are used in daily life (efficiency)

- How can light communicate?
- How can sound communicate?

The scientific principles of light and sound (scientific principles)

- How do we make sound?
- How do we alter sound?
- How is light made?
- How do we alter light?

The ways light and sound support exploration (exploration)

- How does light help us?
- How does sound help us?

Implementing



Learning experience library



IRA (1-5) - Humorous Stories

Amy Rios

What makes these books funny?

Imogene's Antlers (1)

That's Good! That's Bad! (1)

The Old Man & His Door (0)
 Dooby Dooby Moo (2)
 Animals Should Definitely Not Wear Clothing (0)



Open - Sound Brain Pop Jr.

Amy Rios

Search "Sound" on Brain Pop Jr.



Art-Color and Mood

Amy Rios

Students work on color mixing and warm and cool colors.

Function- purpose of the color wheel is to help artist mix colors and the function of color families (warm and cool) is to group colors that have similar feelings/moods.



IRA UOI Text Sets

Amy Rios

City Sounds
 Do you want to walk in the dark
 Imaginative Inventions
 Light and Color
 Most Magnificent
 Thing
 Papa's Mechanical Fish (Kathy)
 Puff...Flash...Bang! A Book about Signals
 Quiet as a
 Butterfly
 comunicandose con senales y patronos
 Duck for Turkey day
 Whistle for Willie



Create a device

Amy Rios

Individually or with a partner create a communication device using materials from the classroom.



IRA (1-5) - Having Fun With Language: Rhyming Texts

Amy Rios

What makes these stories fun to read together?

Mrs. McNosh Hangs Up Her Wash (1)

Sitting Down to Eat (1)

The Day the Goose Got Loose (2)

The Giant Jam Sandwich (1)

One of Each (1)



Identify-Whistling Language Video

Amy Rios

Share as an example of communication across a distance.



Gather and Plan

Amy Rios

Gather information about communication using light and sound.

Make a plan for building a device.



Share and Reflect

Amy Rios



Identify

Amy Rios

Create a device to communicate across a distance using light and/or sound.
 Have a variety of materials available. (can ask families for donations)
 Make a plan for their device.
 Build it. (Create)



Immerse - Pebble Go Sound

Amy Rios



Immerse- Pebble Go Light

Amy Rios

Color and What is Light.



Explore - Sound Walk

Amy Rios

Visit the pier (whale tale) and visit the park and compare the sounds they hear.
 Sound journal.
 Then have them complete 5 minutes of listening at home. Share the next day.



Explore- Light with Magnet Tiles (with) Light Centers

Amy Rios



IRA (4-5) - Mo Willems: Having Fun with Humor

Amy Rios

How does the author or illustrator make decisions to interest readers?
 Knuffle Bunny: A Cautionary Tale (4)
 Knuffle Bunny Too: A Case of Mistaken Identity (1)
 Don't Let the Pigeon Drive the Bus (4)
 Elephants Cannot Dance! (2)
 I Am Invited to a Party! (5)



Music: A Sound Idea (String Instrument Build)

Amy Rios

Over 4 classes Students will explore:
 how resonators work
 how string instruments work
 how different cultures decorate their instruments
 building their own string instruments.
 Students will conduct experiments with their instruments once they are built.



IRA (0-4) - Using Your Imagination

Amy Rios

Why is it important to use your imagination?
 Emma Kate (1)
 Can I Bring Woolly to the Library, Ms. Reeder? (1)
 Tiger in My Soup (0)
 The Gruffalo (1)



Explore-How size influences sound



Amy Rios

- Conduct and investigation and observation of the sounds made by large objects versus small objects (example ukulele versus guitar)
- Students think, discover, and discuss
- After group observation and discussion, students write their observations in their light and sound observation journal



Library: Exploring nonverbal communication, light and sound

Amy Rios

Students will explore nonverbal communication, light and sound through literature. Students will gather knowledge from the following sources: Drawn Together, Discovery Education A First Look- Sound, What is Light?, The Language of Science: Sound Light and Color, Paul the Penguin: Investigating Sound- Clifford- Lights Out



Open-Light Provocation

Amy Rios

- Complete a learning activity (writing time, read aloud, etc.) with as many lights off as possible. Continue teaching and learning in the dark and note student comments.
- Later on, set up a "gallery walk" of light sources
- Bring in and set up multiple light sources (lamp, candle, flashlight, camping lamp, sun). Students rotate around, looking at sources, observing and recording what they notice.
- Group discussion noting observations, look to see if students make the connection between the light sources and their work time in the dark

Turn off the lights, close blinds, and ask students to draw a picture. Slowly add more light (open blinds, turn on string lights, use overhead lights)



Explore-Sound Map

Amy Rios

Model ways to record (drawing and labeling) sound observations in inquiry journal

Sit on the playground and draw a "sound map" of what they hear

Share observations and inferences about the sounds they heard

Ask students what questions they are wondering/thinking about now

Can repeat at home for homework

How will you create opportunities for differentiation?

Students could label using individual letters rather than whole words. Students could write a sentence to express their ideas rather than just labeling with words.

Would need more than 30 mins to walk down to the pier.

Walk around the school (different sides of the building), then the neighborhood, then the pier.



Open-Sound Provocation

Amy Rios

Students will take time trying to guess and record what they think is in the eggs.

Can also be used to try to find pairs.



Explore - Sound Responding to Music

Amy Rios

Students will listen to a variety of music and describe how it affects them, feelings, movement and emotions. Students will then sketch, paint, use oil pastels, markers, or crayons while listening to music.

choices. They will share their pictures and discuss how music can communicate emotions and art can communicate emotions felt through music.



Explore -Light Centers

Amy Rios

Shadow drawing

Light table using big bin and xmas lights.

Translucent pattern blocks

Magna tiles

Shadow puppets using projector/smartboard

Compare light sources - finger light, flashlight, desk lamp
artificial vs. natural light



Music-Share Instrument Creation

Amy Rios



Explore-Shadow Tag

Amy Rios

On a sunny day, play shadow tag in the parking lot.



Explore - sound centers

Amy Rios

stethoscope

string (wrap around their head at different lengths, students can hear and feel the vibration)
create two shakers, one to make a high sound and one to make a loud sound.

Glass of water with different amounts of water.

xylophones (build your own)

musical instruments



Ongoing assessment

We will be looking for the following emerging knowledge from class discussions, experiments, and journal writing:

vibrations/waves cause sound

light makes it so we can see things

different objects let different amount of lights pass through

light and sound can be used to communicate



Teacher questions

How are light and sound made?





















Where do you observe light and sound?

How can light and sound be altered?

What do it mean to "communicate"?
How do light and sound help us?



Resources

-  [d77a8402cbaf3412152a93556c22dd98](#)
-  [Sound BrainPOP Jr.](#)
-  [PebbleGo](#)
-  [PebbleGo](#)
-  [The Turkish Villagers That Don't Speak, But Whistle](#)
-  [sounds eggs](#)
-  [light sound summative](#)
-  [Light and Sound Journal](#)
-  [What is Light?](#)
-  [What is Sound?](#)
-  [Musical Instruments](#)
-  [Animal outlines for shadow art](#)
-  [shadow tag.grid](#)
-  [1-PS4-4 | Science | BetterLesson](#)
-  [1-Tchg Pts World Works 19-20 G1](#)
-  [sounds eggs](#)
-  [Exploring Sound](#)
-  [drawn together](#)
-  [What is Sound](#)
-  [Sound 1st Grade](#)

Reflecting



Teacher reflections

Ongoing reflection

Rene Aguirre-Bjerke • 10:58 am, 22nd Feb 2024

Texts and center activities helped students to understand the concepts of the unit. Light - students understand light sources and reflection. Shadow tag. Light vocabulary demonstrated with flashlights.

Sound is created in many ways and used in different ways (for different reasons).

Students really enjoy the centers.