**Grade** **Level**: 4th Grade **Dates**:

|  |  |
| --- | --- |
| **School Information****School**: Copeland Elementary **School Code**: 060043**Teachers**: David, Jennings, Nelson **Buffer**:  | **Transdisciplinary Theme**: How We Express Ourselves **Segment of Theme**: express ideas, feelings, nature, culture, beliefs**Over Arching Concept**: Discovery |
| **Section 1: Overview** |
| 1. **Central Idea**: Light and sound help people experience their world.
 |
| 1. **Key Concepts**: Function, Connection, Perspective
 |
| 1. **Guiding Related Concepts**:
 | 1. **Lines of Inquiry**:
 | 1. **Teacher Questions (Guided Questions)**:
 |
| Communication Transformation Identity  | 1. Sound and light change as they travel through different objects.
2. Different perspectives influence creativity.
3. Light and sound are vehicles for expression.
 | **DOK Level 3 & 4** * How does sound travel underwater?
* Is there sound on the moon?
* What is the speed of sound?
* What is light made of?
* Describe the effect reflection and refraction have on an object?
* Analyze how changing the amplitude of a sound wave can affect the volume of the sound?
 |
| 1. **Prior Content Knowledge**:
 | 1. **Assessing the Lines of Inquiry**:
 |
| * **LINK Chart**
* List everything you know.
* Inquire about what you want to know.
* Now we are going to take notes.
* What do you know now?
* **KWL Chart (**Focus on K and W)
* What I know?
* What I want to know?
* What I learned?
* **KWHLAQ Chart (**Focus on K, W, and H)
* What I think I know?
* What I want to know?
* How do I find out?
* What I learned?
* What actions do I think?
* What new questions do I have?
* **Unit Pre-Assessment**
 | How will you assess student’s understanding of the lines of inquiry? Light Experiment: Darken the room. For each group of students, place a sheet of paper on the lab tables. Then place a glass of water on top of the paper. Ask students to move the flashlight around until they can pass most of the light through the glass of water. Where do they see light? Can they draw the path of the light from the flashlight through the water and out again?Does Sound Travel Underwater Experiment? - Have students create different sounds with objects above water and underwater to see if there is a difference. Have students record their observations. |
| **Section 2: What Are Our Target Goals?** |
| 1. **Concept Based Summative Assessment:**
 | 1. **Targeted Approaches to Learning (highlight 3):**
 | 1. **Targeted Learner Profile Attributes (highlight 2):**
 |
| Expression through Light and or Sound presentation: Students will explore any place outside of the United States and research how the people there express themselves through light and or sound. Student will then submit a research paper on their place and how they use light and or sound to express themselves. Analyzing and Recreating the Reconstruction Amendments: For this project, students will analyze the 13th, 14th and 15th Amendments, which are also known as the ''Reconstruction Amendments.'' Each amendment attempted to create more equality for African-Americans in the United States.  | Social Skills, Research Skills, Communication Skills. Thinking Skills, Self-Management Skills  | well-balanced, caring, principled, open-minded, risk taker, knowledgeable, communicator, reflective, thinker, inquirer |
| **Section 3: What Assessments will be provided in this unit of inquiry?** |
| 1. Pre-Assessments:

What assessment will be given at the beginning of the unit to inform current understanding  | 1. Formative Content Based Assessments:

What assessments will be given to monitor student learning of content? | 1. Summative Content Based Assessments:

What assessments will be given for students to show mastery of unit content? |
| KWL ChartCanvas Pre- Assessments  | Exit Tickets3-2-1 PromptsQuizzesWhole group discussions | **Timeline of Reconstruction Project:** Students will create a timeline to display the major events which occurred during the Civil War Reconstruction Period.**Light and Sound Presentation:** Students will create a presentation piece utilizing what they have learned about sound and light design. This knowledge will be incorporated into the piece to affect the mood/emotions of an audience. The piece may include a photo, artwork, dramatic performance (poetry/play), dance, etc.  |
| **Section 4: How will we Facilitate Learning?** |
| 1. Provocation:

How will interest into this unit be sparked? | 1. Learning Experiences:

What activities/experiences will help facilitate the learning? | 1. Evidence of Differentiation:

How will the learning experiences be adjusted to different learning styles/abilities? |
| Provocation: * Reconstruction: Teachers will destroy their classrooms then explain to the students that they have to reconstruct the classroom. Leading into the introduction of the Reconstruction period following the Civil War.

Provocation: * Shadow Walk: Take a light and shadow walk around your school/classroom. Observe how the available light sources create shadows.

Provocation: * How Light Travels Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lighttravel/how-light-travels/>
* Light and the Law of Reflection Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lightreflect/light-and-the-law-of-reflection/>

Provocation: * Styrofoam Phone– Create a telephone out of Styrofoam cups to show how sound can travel. Allow students to use your telephone or create their own.
 | SS4H6 Analyze the effects of Reconstruction on American life. a. Describe the purpose of the 13th, 14th, and 15th Amendments. b. Explain the work of the Bureau of Refugees, Freedmen, and Abandoned Lands (Freedmen’s Bureau). c. Explain how slavery was replaced by sharecropping and how freed African Americans or Blacks were prevented from exercising their newly won rights. d. Describe the effects of Jim Crow laws and practices. Provocation: * Jim Crow Separate but Equal Myth- : This can be done as a large or small group discussion. Each group should be provided with a Photo Comparison sheet, and a single photo (or contrasting pair of photos) so that groups are working on different photos. The students will use the Photo Comparison sheet to compare and contrast the two (or in the case of a single photo – to compare and contrast the two different experiences a person would have depending on their race) to evaluate whether separate is truly equal.
* Class Discussion: The teacher will lead a whole group discussion of the 13th, 14th, and 15th amendments. The discussion should touch upon what some of the hardships may have been in voting for the first time for former slaves still living in the South, what obstacles were put in their way, how they may have felt being allowed to participate in those elections for the very first time, what changes and events they may have seen leading up to that moment when they finally got the right to vote.

Activities: * Northern and Southern Economy Compare and Contrast: : In this activity, students will graph some key elements, and then compare and contrast the northern and southern economies. Students will then discuss the data using some guiding questions, and then present their findings.
* The First Vote: Students will work independently, in pairs, or small groups to discuss and analyze the Harper’s Weekly Cartoon provided below titled “The First Vote”. Students either may share their analysis with the large group, present them as a gallery walk in the classroom or hallway, or share with another group.

Week 2 S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects. a. Plan and carry out investigations to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent. Provocation: * Shadow Walk: Take a light and shadow walk around your school/classroom. Observe how the available light sources create shadows.

 Activities: * Shadow Walk Findings: Answer the following questions: 1. Where are the shadows? 2. What shapes are the shadows? 3. Are there any shadows that overlap? 4. What causes the shadows? 5. Are they always the same? Then use a flashlight to create your own shadows. Answer the following questions about your observations: 1. How do the shadows change when you move the flashlight? 2. How are the shadows created with a flashlight similar to or different from shadows created with other types of light sources?
* Drawing Shadows: Have students draw the different shadows they saw during their shadow walk.

Week 3 b. Plan and carry out investigations to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles. c. Plan and carry out an investigation utilizing everyday materials to explore examples of when light is refracted. (Clarification statement: Everyday materials could include prisms, eyeglasses, and a glass of water.) Provocation: * How Light Travels Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lighttravel/how-light-travels/>
* Light and the Law of Reflection Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lightreflect/light-and-the-law-of-reflection/>

Activities: * Spear Fishing Challange: Stand beside the container and look at an angle through the water to the penny. Hold the straw to your eye like a telescope so that you can just see the penny. Without moving the straw, insert the pencil and release. What happened? Did you spear the penny fish? If you were not successful, rethink your strategy and try again. Where do you need to position the straw to be able to hit the penny with the pencil? Try hitting the penny from directly above the water. Construct a diagram of what you think is happening with light that makes it difficult to spear the penny. Include arrows to indicate direction.
* Light Experiment: Darken the room. For each group of students, place a sheet of paper on the lab tables. Then place a glass of water on top of the paper. Ask students to move the flashlight around until they can pass most of the light through the glass of water. Where do they see light? Can they draw the path of the light from the flashlight through the water and out again?

Week 4 S4P2. Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate. a. Plan and carry out an investigation utilizing everyday objects to produce sound and predict the effects of changing the strength or speed of vibrations. b. Design and construct a device to communicate across a distance using light and/or sound. Provocation: * Styrofoam Phone– Create a telephone out of Styrofoam cups to show how sound can travel. Allow students to use your telephone or create their own.

Activities: * Xylophone Rainbow Water- Create instrument with water and food coloring. Adjust the amount of water in each cup to change the sound.
* Does Sound Travel Underwater Experiment? - Have students create different sounds with objects above water and underwater to see if there is a difference. Have students record their observations.
* Light and Sound Presentation: Students will create a presentation piece utilizing what they have learned about sound and light design. This knowledge will be incorporated into the piece to affect the mood/emotions of an audience. The piece may include a photo, artwork, dramatic performance (poetry/play), dance, etc.
 | * Readworks Differentiated passages
* Social studies weekly studies
* Stations based on ability
 |
| 1. Learning Experiences in Specials:

How are Specials Courses able to connect to this unit? | 1. Local/National/Global Connections:

How can we connect the content to local/national/global issues? | 1. Student Action:

What learning experiences support potential student-initiated action? |
| Visual Art4th grade students are learning about movement, shapes, and perspective. In art, students will learn about value and how perspective and light change the way objects appear and how they can be drawn or painted. | Students can explore what other counties were like during the Reconstruction Period.Students will explore any place outside of the United States and research how the people there express themselves through light and or sound.  | * Ways to Make a Change: Students will compare some the rules/ laws from the Civil War Reconstruction Period and Segregation Period. Students will then come up with ways to make the laws fair for everyone.
* Light and Sound Presentation: Students will create a presentation piece utilizing what they have learned about sound and light design. This knowledge will be incorporated into the piece to affect the mood/emotions of an audience. The piece may include a photo, artwork, dramatic performance (poetry/play), dance, etc.
* Shadow Walk Findings: Answer the following questions: 1. Where are the shadows? 2. What shapes are the shadows? 3. Are there any shadows that overlap? 4. What causes the shadows? 5. Are they always the same? Then use a flashlight to create your own shadows. Answer the following questions about your observations: 1. How do the shadows change when you move the flashlight? 2. How are the shadows created with a flashlight similar to or different from shadows created with other types of light sources?
 |
| 1. Student Agency and Play:

What learning experiences provide students with voice, choice and ownership? What play opportunities will be provided by Kindergarten/Pre-K?hands on/STEAM for K-5? | 1. Resources:

Which resources will you and the students use? This may include people, places, technologies, learning spaces and physical materials.  |
| * Shadow Walk Findings: Answer the following questions: 1. Where are the shadows? 2. What shapes are the shadows? 3. Are there any shadows that overlap? 4. What causes the shadows? 5. Are they always the same? Then use a flashlight to create your own shadows. Answer the following questions about your observations: 1. How do the shadows change when you move the flashlight? 2. How are the shadows created with a flashlight similar to or different from shadows created with other types of light sources?
* Xylophone Rainbow Water- Create instrument with water and food coloring. Adjust the amount of water in each cup to change the sound.
* Does Sound Travel Underwater Experiment? - Have students create different sounds with objects above water and underwater to see if there is a difference. Have students record their observations.
* Light and Sound Presentation: Students will create a presentation piece utilizing what they have learned about sound and light design. This knowledge will be incorporated into the piece to affect the mood/emotions of an audience. The piece may include a photo, artwork, dramatic performance (poetry/play), dance, etc.
* Spear Fishing Challange: Stand beside the container and look at an angle through the water to the penny. Hold the straw to your eye like a telescope so that you can just see the penny. Without moving the straw, insert the pencil and release. What happened? Did you spear the penny fish? If you were not successful, rethink your strategy and try again. Where do you need to position the straw to be able to hit the penny with the pencil? Try hitting the penny from directly above the water. Construct a diagram of what you think is happening with light that makes it difficult to spear the penny. Include arrows to indicate direction.
 | MyOn Brain Pop iReady Readworks Flocabulary Education Galaxy GADOE Envision Social Studies Weekly Media Center Books How Light Travels Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lighttravel/how-light-travels/> Light and the Law of Reflection Video: <https://gpb.pbslearningmedia.org/resource/lsps07.sci.phys.energy.lightreflect/light-and-the-law-of-reflection/> |
| **Section 5: Reflection** (Write the year, change font color for each year) |
| 1. Reflect on learning experiences:
 |
| David- My students enjoyed making connections between the content and real world experiences. The provocations for this unit and the learning experiences really captivated my students. They enjoyed the shadow walk findings activity, and were intrigued by the various shapes of each shadow. My students also enjoyed the Styrofoam telephone activity to see how light traveled. They asked could they use the cups for a similar game we played during morning meeting called telephone where students have to pass a message down the line and the last person has to say it out loud. Nelson: I believe the students really enjoyed building the bridge between what they know and what they were learning. They were able to make inferences while exploring through this unit. Jennings- My kids really enjoyed learning about the whisper telephone activity to see how light traveled. They really like playing the telephone game.Visual ArtStudents studied the artist Wayne Thiebaud and learned about how light and value can make their dessert drawings appear to be 3D. Students were eager to point out and make connections with the content they were learning in their homeroom class relating to this unit of inquiry. |
| 1. How were the tasks differentiated to meet different learning styles?
 | 1. How did the learning experiences and strategies we used throughout the unit help to develop and show students understanding of the central idea?
 |
| David- I made sure to differentiate my instruction to meet the various needs of my learners by catering to their individual learning styles. I provided visual examples for my visual learners, hands on opportunities for my kinesthetic leaners, and videos and recordings for my auditory learners. Students were also giving accommodations if they were needed. Nelson: I was able to differentiate to meet the different learning styles by focusing on the needs of my expectational students. While planning and carrying out this unit I made that activities that would work for my Speech, IEP, 504, Gifted and ELL students. I created more rigor where it was needed and made activities less rigorous for certain students as well. We included learning experiences that were for visual, auditory, kinesthetic, and reading/ writing learners. I also included many technology activities as we have transitioned to a 1 to 1 school with laptops.Jennings- I made sure to differentiate my instruction to meet the various needs of my learners by providing additional time for students who required additional assistance.  | David- The learning experiences and strategies used throughout the unit helped to develop and show students understanding of the central idea by allowing them to make connections between past and present learning. Students were able to vividly see and experience how light and sound help people to experience their world. Nelson: Students were able to make the connection between how people experience life through sound and light by completing expression projects.  |
| 1. What learning experiences best supported students’ development and demonstration of the attributes of the learner profile and approaches to learning?
 | 1. How effective were the summative assessments in measuring student learning? What, if any, changes need to be made to the assessments?
 |
| As a team we have decided these learning experiences best supported students development and demonstration of the attributes of the learner profile and approaches to learning: Nelson, David, Jennings:1. Research: researching amendments, reconstruction, Jim Crow Laws, sound and light.
2. Communication: presenting their creative expression projects.
3. Thinking: students thought of ways in which they could have made changes during the Segregation Period.
 | David- I think the summative assessments were very effective in measuring students learning. They also provided a plethora of ways for students to show what they have learned in a way that best suits them. Nelson: The assessments were creative and engaging ways to assess students. I believe that they were very effective in measuring student learning. Jennings: I also agree with Mrs. Nelson and Ms. David. |
| 1. What student-initiated inquiries (questions) arose from this unit of inquiry?
 | 1. What student action arose from this unit of inquiry?
 |
| David- 1. Does it mean without light and sound we would not be able to survive since its one of our 5 senses ? 2. How does sun beam work ?3. Will light ever disappear ?4. How does the eardrum actually get sound in our ears to hear sound ?5. Is there a source of sound in space ? And if so what makes it ??6. If we didn’t have any light would the sun still shine ? 7. How does your voice box create sound ?8. Can sound go through liquid and are there different types of sound ways throughout the earth. 9. Is there sound under earth ? Nelson: some questions that arose from this unit were: 1. Did the free slaves fight the old slave owners when they become free?
2. How did the slaves earn money when they became free?
3. Why didn’t white people like black people?
4. Why couldn’t everyone go to the same schools?
5. Can you see light underwater?
6. Can you see light through all paper?
7. Is sign language a way for deaf people to express what they want?

Jennings: 1. Is the sun really a hot ball of fire?
2. Why does it hurt when you look at the sun?
3. Why didn’t white people like black people?
4. Did black people really like white people?
 | David- Students wanted to experience a day without using light in the classroom to see how it would affect things ? Nelson: Students compared Jim Crow Laws and the mask Laws. Students used the flash lights on their cell phone to see if the light could be seen through the different types of paper.  Jennings: Students work without light to see is there was going to be a difference. |
| 1. Any additional notes or changes that need to be considered next year?
 |
| David: My students were not able to experience all of the learning experiences presented in the unit due to state testing. I would suggest next time making fewer activities so students are able to experience the whole unit.Nelson: This unit took place during GMAS test prep time. I feel as though my students were not given enough time to explore this unit with fidelity being that our focus was on preparing for the state assessment. I will definitely take this into consideration when working through this unit next year. Jenings: Due to GMAS prep we fell short on experience the learning experiences presented in the unit. |
| **Section 6: Picture Evidence** |
|  |

\*\*Scroll Down for Unit Standards\*\*

**Unit Standards**:

**ELA**:

**Math**:

**Science**:

**Social Studies**: