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**Important**

There is no need to ask the IB to share a copy: **you must download and share it through your own google drive.**

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**Planning the inquiry**

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| **1. What is our purpose?****To inquire into the following:*** **Transdisciplinary theme: How We Express Ourselves**
* **Central idea : Light and sound help people experience their world.**

**summative assessment task(s):** What are the possible ways of assessing students’ understanding of the central idea? What evidence, including student-initiated actions, will we look for?Performance Matters TestBenchmark AssessmentsRCBOE Unit Pre-Test (Canvas Commons ELA)RCBOE Unit Post Test (Canvas Commons ELA) RCBOE Unit Pre-Test (Canvas Commons Math)RCBOE Unit Post Test (Canvas Commons Math)RCBOE Unit Pre-Test (Canvas Commons Science)RCBOE Unit Post Test (Canvas Commons Science)RCBOE Unit Pre-Test (Canvas Commons Social Studies)RCBOE Unit Post Test (Canvas Commons Social Studies)Choice boardsPowerPoint Presentations Student discussions Weekly Teacher created quizzes in each subject areaCulminating Task- 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.**PE/O’Brien - Students will be learning about people that express themselves differently through dance and music.** | Class/grade: 4th grade Age group: 9-10School: Copeland Elementary School code: Title: How We Express OurselvesTeacher(s): Hall, B.Brown, Nelson, Ferguson, Rivera Date: Proposed duration: 3-4 Weeks **2. What do we want to learn?**What are the key concepts (form, function, causation, change, connection, perspective, responsibility, reflection) to be emphasized within this inquiry?**Function – Light and Sound****Perspective – Creative/Artistic** **Connection – Art meets Science (Musical instrument project)** **What lines of inquiry will define the scope of the inquiry into the central idea?*** **Sound and light change as they travel through different objects.**
* **Different perspectives influence the creativity.**
* **Light and sound are vehicles for expression.**

**What teacher questions/provocations will drive these inquiries?*** Can sound travel underwater?
* Is there sound on the moon?
* What is the speed of sound?
* What is light made of?
* What was a political consequence of the Civil War?
* What was an economic consequence of the Civil War?
* Jim Crow Provocations (See Box 4)
* Shadow Box (See Box 4)
* How Light Travels Video (See Box 4)
* Styrofoam Phone (See Box 4)

**PE/Obrien - How do people express themselves through dance? How can people express themselves through music?** |
| **3. How might we know what we have learned?***This column should be used in conjunction with “How best might we learn?”*What are the possible ways of assessing students’ prior knowledge and skills? What evidence will we look for?* **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**

**Pe/O’Brien - Students will be assessed through verbal questioning on their prior knowledge of how music and dance represent different cultures.**What are the possible ways of assessing student learning in the context of the lines of inquiry? What evidence will we look for?ELA - Shadow Poetry , Abraham Lincoln ( Mini Bio) Questionnaire ,Push Through read aloud( talk and turn) Harriet ( The Movie) / talk and turn / We Determine the theme of the stories and compared and contrast similar themes topics and events in the story. Also we explained the events in the stories events and ideas including concepts what happen and why ? We completed all of this in Historical Scientific and Technical text strategies. Shadow Poetry was a subject that convey a drop of Scientific fictional data as well as it gave the students the opportunity to practice on their phonics and vocabulary. Evidence include writings as well as informative expository text that include facts ,definitions ,details, formatting , linking words and precise language and concluding statements. SCIENCE : We can express ourselves through art and creativity : Function ~ Light and Sound Perspective ~ Creative Artistic Connection~ Art Meets Science How does a string telephone work ? Sound waves from your voice vibrate down the string and into the cup of your partner. Color Mixing with Light experiment ~ We will use four small flashlights from the dollar tree then we will wrap each flashlight with a different color of cellophane sheet cut in half. We will use red, yellow,green,and blue. Wrap it with tape or rubber band to secure it on . We will include a printable light worksheet you will be able to use it to help you track your colors you make as you mix the lights. I will also incorporate a worksheet it will be a coloring page to fill in colors.Questions ; Do the lights react the same way points do when you mix them ?What happens when you mix the red light and the blue light ?What happens when you mix the red light with the yellow light?Color the Venn diagram circle to reflect what you see when you mix the colors with the flashlightsAdd the graphing piece in for the evidence The rainbow walking water experiment : Place several cups two inches apart from one anotherFill the 1st 2nd 3rd 4th 5th cup with water halfway Add five drops of water red coloring in the first and the and the 5th cup Add five drops of food coloring to the yellow food coloring Add five drops of blue food coloring to the 5th cup In order to complete the experiment you need six different sections of paper towel . Roll each paper towel up until a long caterpillar like shape and allow the paper towel to go from one cup to the other and allow the cups to sit for a complete hour when you come back you will discover how the rainbow travels from one cup to the other. This is such a fun colorful creative experiment. Evidence Nature of Light and Transparent Translucent Opaque Activity Game experiment Students will get three types of material one which will be Transparent / Translucent / Opaque Transparent : Objects allow the objects to pass through them. This means that we can clearly see through them Translucent : Objects will only allow some light to pass through this means that we can partially see through them Opaque : Objects do not allow any light to pass through them. This means you cannot see through them at all Rainbow skittle Science experiment : Materials : Plate , Skittles, H2O ( Evidence ) will create a real life prism on the paper plate once you let the water reach the skittles such a fun and delicious experiment !Prism Play and chalk Art : Instructions take a black construction paper and use color chalk to create multiple lines on the paper and use a prism to magnify the lines to create a multitude of colors through light Creating light patterns with a cd : use a CD to allow the class to discover the light patterns and let them create a paint and sip event were they can recreate the light pattern that they see ( Evidence) will be the ending results of the different art pieces on the canvas // Place CD in a cup of H20 Let them limit the access of color so they can create colors from the regular primary colors for a great cross connection to create a different environment for paint and sip concept. SOCIALSTUDIES Abraham Lincoln Bio Read KWL chart on textClass Discussion on what part did Abraham Lincoln play in slavery ? Harriet ( You tube Premiere) Talk and Turn Write a narrative explaining what is your intake on the movie and do you recall some of the very things that we have discussed about the history today in the movie.KWL chart on Premiere **PE/O’Brien - Students will create their own patterns of movement.** | **4. How best might we learn?**What are the learning experiences suggested by the teacher and/or students to encourage the students to engage with the inquiries and address the driving questions?Week 1: Social StudiesSS4H6 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: ScienceS4P1. 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: Scienceb. 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: ScienceS4P2. 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.
* **PE/O’Brien - Students will learn about the African dance the KOU-KOU.**

What opportunities will occur for transdisciplinary skills development and for the development of the attributes of the learner profile?

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* Learner Profile of the month
* **PE/O’Brien - Open-Minded**
* Using the mobile library to get books that represent the Learner Profile
* Classroom Learner Profile “Star Seat”
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| **5. What resources need to be gathered?****What people, places, audio-visual materials, related literature, music, art, computer software, etc, will be available?**MyOnBrain Pop iReady ReadworksFlocabulary Education Galaxy GADOE EnvisionSocial Studies WeeklyMedia Center BooksHow 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/>**PE/O’Brien - Laptop/Ipad access**How will the classroom environment, local environment, and/or the community be used to facilitate the inquiry? Gallery WalkMedia Center: Research Projects Virtual guestPaint and Sip EIP – Benchmark Universe Leveled Readers NewsELA differentiated passages ReadWorks differentiated passages Common Core Progress Reading Passages |

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| **6. To what extent did we achieve our purpose?**Assess the outcome of the inquiry by providing evidence of students’ understanding of the central idea. The reflections of all teachers involved in the planning and teaching of the inquiry should be included.* **Nelson- Virtual students were able to show thier understanding of the Central Idea. I broke the Central Idea down and students completed the Carousel Brainstorming activity.**
* **Brown- With the** Shadow Walk: Take a light and shadow walk around your school/classroom. Observe how the available light sources create shadows. The students were able to make a connection with the central idea “**Light and sound help people experience their world.” Shadows can change in size and shape. Before completing the activity class was asked to predict a hypothesis on all kinds of shadows that they think they will see.**
* Hall- Students were able to show a clear understanding of the central idea. They were able to make the connection how light and sound influence the world. They were able to appreciate how we could incorporate this central idea in both social studies and science.
* PE/Obrien - Students did not have a level of background knowledge that would have allowed them to really be impacted by the comparison of American soccer and football from other countries. I like the idea of the comparison but next time I would need help from core teachers to introduce students to soccer vs football before we discuss it in the gym. Core teachers would be able to show videos and assign reading that would act as a provocation as well as an intro to the P.E. lesson.

How you could improve on the assessment task(s) so that you would have a more accurate picture of each student’s understanding of the central idea.* **Nelson: To improve on the assessment task of understanding the Central Idea, I incorporated more class time to refer to the Central Idea. I asked questions that connected the central idea and the standards as best as they could be so that I could incorporate them on the assessment.**

**Brown- I would like to create more exit tickets to assess the learning as we travel through the unit and its targets.** * Hall- I could improve the assessment tasks by having them do the light and sound project independently instead of in groups. This will give more sight on what the individual student has learned and not just them collectively. It would give more perspective to the students as well because we can see how students learned from their different point of views.

What was the evidence that connections were made between the central idea and the transdisciplinary theme? * **Nelson- Virtual students were able to make the connection to the Central Idea and the theme by researching and understanding that light and sound help people experience their world.**

**Brown- Evidence was the observations on the different types of shadows that was made. The data from the bar graph is another form of evidence as well !** * **Hall- Evidence was shown when students were able to figure out how to effectively work the xylophone water experiment. They were able to determine the difference between high pitch and low pitch sounds and how they could change the sound by either pouring out water or adding water to the glass.**
* **PE/Obrien -** Older students eventually made a connection between American Football and Soccer vs Futbal. Younger students were able to learn a few rules that allowed them to play soccer more effectively.
 | **7. To what extent did we include the elements of the PYP?**What were the learning experiences that enabled students to:* develop an understanding of the concepts identified in “What do we want to learn?”
* demonstrate the learning and application of particular transdisciplinary skills?
* develop particular attributes of the learner profile and/or attitudes?

In each case, explain your selection. * Nelson:

Concepts:* Connection: How is it connected to other things?
* Causation: Why is it the way it is?
* Reflection: How do we know?

Transdisciplinary Skills:* Research: Students did independent research on famous abolitionist, and also on stars and planets. ·
* Self-Management: Students were required to use time management and organization to complete independent assignments on their Asynchronous learning days.

 Learner Profiles: * Open- minded: Students had to be open-minded when talking about slavery and abolitionist.

**Brown- Students had the opportunity to compare and contrast different shapes and sizes via the Shadow Walk. They also had the opportunity to review some of the observations and comments the class made during the walk. They were asked to stop and think about what is a shadow and how is a shadow made. They had the chance to create a Bar graph and they were able to write their ideas on a chart. The Bar graph divided the different sizes of the shadow ( large / small / between).*** Hall- There were many different learning experiences that enabled students to develop an understanding of the concepts, demonstrate the learning and application of transdisciplinary skills and develop particular attributes of the learner profile. The most effective experience was the Jim Crow experience. The students had very strong connections with that time period. They were able to show how caring and open minded they are during this activity. They wer able to understand and relate to those times because many of them said they could still see some of those things happening today. They were able to do more research and learn about that time period. Many of them initiated their own presentations to enlighten the other students in our class and they were able to help the understand and relate to this topic.
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| **8. What student-initiated inquiries arose from the learning?**Record a range of student-initiated inquiries and student questions and highlight any that were incorporated into the teaching and learning.* **Nelson- Some student- initiated inquires and questions were: “Why are they still treating people like that?” “ Why are there so many Amendments?” Can we make our own class Amendments?” “What makes shadows?” “Can animals hear?”**

**Brown- 1. During the walk will ask students to search for shadows made by bushes.** **2. Will ask students to be descriptive and take photos of the ones** **that they find the most interesting.** **3. I will also ask every student to attempt to find the biggest as well as**  **The smallest shadows as well.** **4. Will complete a bar graph on shadow sizes ( big, small, between)*** Hall- Students initiated many questions about how light can pass through different objects. They wanted to look more closely into certain materials to understand why they would be considered transparent, translucent, or opaque. They specifically were asking about plastic because they believe that some plastic could be considered translucent. This led to us researching more into different kinds of plastic and if there is really a difference between a plastic bag that you get from Walmart and one that you put snacks in.

Ferguson (EIP) - When working in small groups, my eip students would read passages related to the unit. During the unit, students got a chance to inquire to get their questions answers.At this point teachers should go back to box 2 “What do we want to learn” and highlight the teacher questions/provocations that were most effective in driving the inquiries. * **Nelson- Can sound travel underwater? What is the speed of sound?**

**What student-initiated actions arose from the learning?** Record student-initiated actions taken by individuals or groups showing their ability to reflect, to choose and to act.**Nelson- My students were able to initiate many actions. One student initiated action that was taken was students researching how different animals hear. This was initiated by a student asking the question: “Do animals without ears hear?” There was a student discussion, followed by a quick research to answer the question.** **Brown- Instruct students that they will go for a walk and notice different types of shadows during the walk.*** **Hall- While doing the xylophone water activity students wanted to use those cups of water and incorporate what we learned about light in the previous weeks. We ended up pulling out the flashlight and shining it through the glasses with the water coloring in them. They noticed that if we put did not have something to block the light, it would shine through all the glasses with no break or refraction.**
 | **9. Teacher notes** |

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