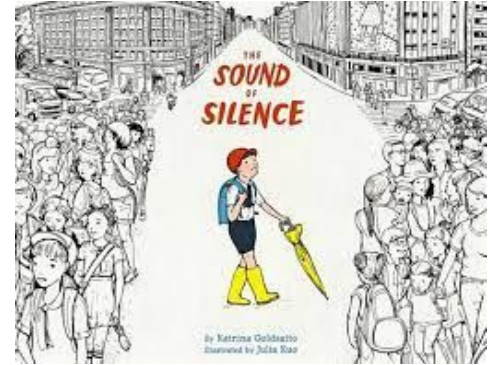




# Sound Waves



*A Cross-Curricular Approach*  
A BEN Workshop presented by  
Tiffany Bean and Florence Brown, May 3rd, 2023

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# BERMUDA EDUCATION NETWORK



# Tiffany Bean

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I am a wife, mother of three (all boys!), and lover of coffee and traveling.

I have obtained my BA.Arts From St.Mary's University, a PGCE from Sunderland University, and I am currently completing my Masters in Educational Leadership.

I have been a teacher with BPSS for 8 years, and I am currently a P4 teacher at Purvis Primary School. I am also a math tutor for The Reading Clinic.

I have taken advantage of the many learning journeys BEN has offered over the years, and have enjoyed partnering with BEN to collaborate with other teachers to make teaching and learning exciting.

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# Florence Brown

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I am a Bermudian primary school teacher. I have 8 years teaching experience in Bermuda and 4 of those have been in the Bermuda Public School System. I currently teach P5 at St. Georges Prep. I am the teacher leader for ELA, and MTSS coach at the school.

I have a Masters Degree in Education with a focus on Restorative Practices. I have also offered PD around the use of Restorative Practices within schools.

Outside of teaching, some of my passions revolve around Bermuda's natural history and the environment and I often find myself in/around one of Bermuda's many bays, harbours, beaches or reefs.

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**Please introduce yourself and tell us which school you are from.**





# CIE STANDARDS IN THESE LESSONS

## Science

**5Ps.01 Investigate how sounds are made by vibrating sources.**

**5TWSc.07 Use a range of secondary information sources to research and select relevant evidence to answer questions**

**5Ps.02 Describe sounds in terms of high or low pitch and loud or quiet volume.**

**5TWSp.01 Ask scientific questions and select appropriate scientific enquiries to use.**

**5TWSc.08 Collect and record observations and/or measurements in tables and diagrams appropriate to the type of scientific enquiry**

**5TWSa.03 Make a conclusion from results informed by scientific understanding.**

**5Ps.03 Investigate how to change the volume and pitch of sounds.**

## Literacy

**\*5Ri.06 Explore explicit meanings in a range of texts.**

**\*5Ri.09 Explore implicit meanings in a range of texts.**

**\*5Rv.03 Identify and record interesting and significant words, and synonyms, from texts to inform own writing**

**\*5Ws.03 Use organisational features appropriate to the text type, e.g. bulleted and numbered lists.**

**5Wv.03 Choose and use words and phrases carefully to convey feeling and mood.**

**\*5Wp.04 Evaluate own and others' writing, suggesting improvements for sense, accuracy and content, including to enhance the effect.**

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# **BUEI Expedition**

**With  
Hannah Horsefield**

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| Lesson 1:  | Introduction and discussion   | Main Activity"   | Plenary:   | Vocabulary  |
|--|---|--|--|---|
| <p><b>WALT:</b> answer questions drawing from explicit and implicit clues from the text</p> <p><b>TIB:</b> we need to be able to answer questions in full sentences about texts in order to reflect on what we've read</p> <p><b>WALT:</b> create an sound adjective bank for showing setting descriptions</p> <p><b>TIB:</b> it will help us show, not tell, in our writing</p> <p><b>S.C.</b> I can answer all 9 comprehension questions in written form.</p> <p>I have created an adjective bank to use for my writing.</p> <p><b>Curriculum objectives:</b></p> <p><b>*5Ri.06</b> Explore explicit meanings in a range of texts.</p> <p><b>*5Ri.09</b> Explore implicit meanings in a range of texts.</p> <p><b>*5Rv.03</b> Identify and record interesting and significant words, and synonyms, from texts to inform own writing.</p> | <p>Tell me what your favourite sound is and why?</p> <p>Make a word wall on flipchart paper or using Kahoot!</p> <p><u>Read aloud:</u><br/>'The Sound of Silence' by Katrina Goldsaito<br/><a href="https://www.youtube.com/watch?v=FDTvNpAy8xA">https://www.youtube.com/watch?v=FDTvNpAy8xA</a></p> <p>What did you like about this story?<br/>What did it make you think?</p> | <p>In reader's notebooks let's answer these questions in full sentence:</p> <p>Within the Text:</p> <ol style="list-style-type: none"> <li>Who is the main character in the story?</li> <li>What is Yoshio fascinated by?</li> <li>What is a koto?</li> </ol> <p>Beyond the Text:</p> <ol style="list-style-type: none"> <li>Why do you think the author chose to set the story in Tokyo?</li> <li>How does Yoshio's experience with the koto player change his perspective on sound?</li> <li>Can you think of a time when you appreciated silence or the spaces between sounds?</li> </ol> <p>About the Text:</p> <ol style="list-style-type: none"> <li>What is the main message of "The Sound of Silence"?</li> <li>How does the author use illustrations to enhance the story?</li> <li>How does this book make you feel about the world around you?</li> </ol> | <p>What adjectives did you hear to describe different sounds?<br/>(Create a class chart - can also do in other lessons for other senses)</p> <p>Challenge: can you think of any others to add to our list?</p> | <p>explicit, implicit, adjective, message/moral, fascination, enhance</p> |



| Lesson 2:  | Introduction and discussion   | Main Activity  | Plenary   | Vocabulary  |
|--|---|--|---|---|
| <p>WALT: investigate how sounds are made by vibrating sources</p> <p>TIB: we need to understand the sources of sound, before considering how different types of sounds are made.</p> <p>S.C. I can take notes to help me describe how sounds are made and how we hear sounds</p> <p>Curriculum objectives:<br/> <b>5Ps.01</b> Investigate how sounds are made by vibrating sources.</p> <p><b>5TWSc.07</b> Use a range of secondary information sources to research and select relevant evidence to answer questions</p> <p><b>*5Ws.03</b> Use organisational features appropriate to the text type, e.g. bulleted and numbered lists.</p> | <p><b>KNOWLEDGE HARVEST:</b></p> <p>Four Corners -</p> <p>How do we make sounds?</p> <p>Where do sounds come from?</p> <p>How does sound get in our ears?</p> <p>How can we make different sounds?</p> <p>Share findings and then discuss this question:</p> <p>What types of enquiry could we use to answer these questions?</p> | <p><u>What are we surrounded by?</u></p> <p>Air is made up of a mixture of different gasses.</p> <p>All sounds are the result of vibrations from a vibrating source which cause air particles to move.</p> <p>There are many different ways these vibrations can be made.</p> <p><u>What is the easiest way for a human to make sound?</u></p> <p>Our voice</p> <p>As you watch this video take notes to explain how our voice is a source of sound and uses vibration<br/> <a href="https://www.youtube.com/watch?v=JF8rIKuSoFM">:https://www.youtube.com/watch?v=JF8rIKuSoFM</a></p> <p>Recap: Air from the lungs is pushed through the vocal chords which cause the particles in the air to vibrate. Different movements of the vocal chords cause different vibrations in the air which produces different sounds.</p> <p>Instrument sort:</p> <p>How does each instrument produce vibrations?</p> | <p>Recap: SOUND IS MADE FROM THE VIBRATION OF AN OBJECT OR MATERIAL THAT'S MOVING.</p> <p>Challenge: research how sounds get into our ears?</p> <p>Try this fun sound investigation in class or at home:</p> <p><a href="#">Science for kids - Measuring Sound   Body Parts   Experiments for kids   Operation Ouch</a></p> | <p>vibration, voice, speech, source, particles, material, movement,</p> |

| Lesson 3:   | Introduction and discussion   | Main Activity   | Plenary   | Vocabulary   |
|---|---|---|---|--|
| <p>WALT: Describe sounds in terms of high or low pitch and loud or quiet volume.</p> <p>WB: it is important to understand the difference between pitch and volume when talking about sound</p> <p>WC: I can describe sounds based on pitch and describe sounds based on volume. I can compare the differences between different objects' pitch and volume.</p> <p>Curriculum objectives:<br/> <b>Ps.02</b> Describe sounds in terms of high or low pitch and loud or quiet volume.</p> <p><b>TWSp.01</b> Ask scientific questions and select appropriate scientific enquiries to use.</p> <p><b>TWSc.08</b> Collect and record observations and/or measurements in tables and diagrams appropriate to the type of scientific enquiry</p> <p><b>TWSa.03</b> Make a conclusion from results informed by scientific understanding.</p> | <p>In science, sound is a type of energy that travels through the air or other materials in the form of <u>waves</u>.</p> <p>These waves can be described in terms of pitch and volume.</p> <p>What do you think the words pitch and volume mean?</p> | <p>investigate pitch and volume of sounds:</p> <p>What questions do we want an answer to?</p> <p>Materials needed:</p> <ul style="list-style-type: none"> <li>Various objects that can produce sounds (e.g. a pencil, a spoon, a rubber band, a bottle filled with water, etc.)</li> <li>A ruler or measuring tape</li> <li>A notebook and pen to record observations</li> </ul> <p>Hypothesis - What do we think will happen based on what we already know?</p> <p>Method: Set up a quiet space for the activity, free from background noise.</p> <ol style="list-style-type: none"> <li>Choose one of the objects and make a sound by striking, plucking or shaking it.</li> <li>Listen carefully to the sound and try to describe its pitch (high or low) and volume (loud or quiet).</li> <li>Use the ruler or measuring tape to measure the distance between you and the object that produced the sound.</li> <li>Record your observations in your notebook, including the object used, the distance between you and the object, and your description of the sound in terms of pitch and volume.</li> <li>Repeat the process with the other objects, making sure to record your observations for each one.</li> </ol> <p>After completing this activity, you can discuss your findings with a partner or group. Consider comparing the pitch and volume of the different objects, and discuss any patterns or similarities you observed. You can also try different distances between you and the objects to see if it affects the pitch or volume of the sound.</p> | <p>Conclusions:<br/> What is pitch?</p> <p>What is an example of something that has high and something that has low pitch?</p> <p>What is volume?</p> <p>What is an example of something that is loud and something quiet?</p> <p>From this experiment, describe the difference between pitch and volume?</p> | <p>low pitch, high pitch, loud, quiet, volume, hypothesis, method, conclusion, sound waves, frequency,</p> |

| Lesson 4 :  | Introduction  | Main Activity   | Plenary   | Vocabulary                                |
|---|---|---|---|---|
| <p><b>WALT:</b> Change the volume and pitch of sounds</p> <p><b>TIB:</b> It is important to know how to differentiate between different sounds</p> <p><b>Success Criteria:</b> I can investigate how the speed of vibrations can change pitch</p> <p><b>Curriculum Objectives:</b></p> <p><b>5Ps.03</b> Investigate how to change the volume and pitch of sounds.</p> <p><b>5TWSp.03</b> Make predictions, referring to relevant scientific knowledge and understanding within familiar and unfamiliar contexts.</p> <p><b>5TWSA.01</b> Describe the accuracy of predictions based on results</p> | <p>We now know that not all sounds are alike. Some are loud, soft, high pitched and low pitched.</p> <p>The pitch of a sound is based on how high or low the frequency of a sound is, which has to do with how fast or slow the vibrations are.</p> <p>Now that we know the difference between volume and pitch, let's investigate how to change the volume and pitch of sounds.</p> <p><b>Materials Needed:</b><br/>         Zipper (on jacket)<br/>         Ruler<br/>         Scissors<br/>         Paper Clip<br/>         Plastic cup<br/>         Tape<br/>         Rubber Band</p> | <p>Let's investigate!</p> <ol style="list-style-type: none"> <li>Can a zipper produce different sounds? Try it! Zip your zipper up very fast and listen to the sound. Now zip it up slower - what do you notice? Record observations on chart (sample chart below)</li> <li>Carefully use scissors to punch a small hole in the bottom of a cup. Then cut the rubber band so that it becomes one long piece.</li> <li>Tie the paper clip onto one end of the rubber band. With the cup upside down, thread the rubber band through the cup and the hole in the cup. The paper clip should be held inside the cup with the rubber band coming out through the hole.</li> <li>Tape the 12-inch end of the ruler to the side of the cup so that it is standing up beside the cup.</li> <li>Now stretch the rubber band over the end of the ruler and tape it to the other side. Pluck the rubber band and observe the sound. Record your observations.</li> <li>Remove the tape and pull the rubber band over the ruler even more to make it tighter. Pluck the rubber band again and observe the sound. Record your observations. Was the sound different this time?</li> <li>Experiment with the rubber band by pressing one finger against the rubber band and ruler at the 1-inch mark and plucking it with the other hand. Try this at different lengths... 3-inch, 5-inch, 7inch. Record your observations of the sounds at each.</li> </ol> | <p>Students will record their observations on their chart.</p> <p><b>Discuss:</b></p> <ul style="list-style-type: none"> <li>How can the pitch of a sound be modified?</li> <li>If the vibrations are slower, is the pitch higher or lower?</li> <li>If the vibrations are faster, is the pitch higher or lower?</li> </ul> | <p>pitch<br/>vibrations<br/>frequency</p> |

| Lesson 5  | Introduction and discussion:  | Main Activity  | Plenary  | Vocabulary   |
|---|---|--|--|--|
| <p><b>WALT:</b> use ideas from ‘The Sound of Silence’ to write about walking through our community.</p> <p><b>TIB:</b> it is important to consider how different places and cultures lead to different setting descriptions</p> <p><b>S.C.</b> I have written a setting description for stories that take place in Bermuda linking to our culture and environment</p> <p><b>5Wv.03</b> Choose and use words and phrases carefully to convey feeling and mood.</p> <p><b>*5Wp.04</b> Evaluate own and others’ writing, suggesting improvements for sense, accuracy and content, including to enhance the effect.</p> | <p>We heard about all of the various sounds that Yoshia heard as he walked through his city.</p> <p>Let’s list a few.</p> <p>Are these the same sounds that we hear in Bermuda?</p> <p>Why?</p> | <p>Today we are going to consider writing a setting description that’s linked to the sounds that represent our culture and environment.</p> <p>Game:<br/>Class circle using beach ball: Everyone name one sound they think of when they think of Bermuda or their community? (No one can name the same sound)<br/>When everyone has had a turn, keep going passing at random and if anyone pauses too long they are out and sit down and whoever is left by the end is the winner.</p> <p>Now we have a long list of Bermuda sounds!</p> <p>Imagine yourself walking through your community, just like Yohsio, and create a paragraph describing the setting. (Focus on the sounds we talked about, as well as what it looks like.)</p> <p>Bonus points: add a simile or metaphor to your description.</p> | <p>Read aloud of their Bermuda setting description. (offering feedback)</p> <p>What do you think ____ described well?</p> <p>Could you add anything to their descriptions?</p> <p>Draw an illustration to match your setting description. - Can be set for homework.</p> | <p>Setting, Description, culture , Environment, Simile, metaphor</p> |

# Keep in touch!

We will be asking for your feedback on this unit:

- what went well;
- what challenges there were;
- where you brought in your own ideas and resources; and
- learning that you saw in your class and in what ways.

This will help us for next year..

Thank you for attending. Please can you complete this Google Form providing feedback on our workshop.

To share any learning in action from this cross-curricular unit, please email photos to Steph at [stephanie@ben.bm](mailto:stephanie@ben.bm) - and let her know if you want to be tagged! Photos will then be posted on Instagram and FB.

\*\*\*Please make sure waivers are checked, or take photos of work.



# Link to Teacher Resources

The lesson plans, slides, and video will be shared on the BEN website as of tomorrow:

<http://www.bermudaeducationnetwork.com/what-we-do/lesson-plans/>

Feedback Form Link:

<https://docs.google.com/forms/d/e/1FAIpQLSd7q1VWaWz1CB4VUB-yOvuC7XeBBfYWjmaH46ftHvt1vtpQyQ/viewform>