**Where Can We Find Sound?**

**Sound**

**Overview:**

This inquiry resource package on sound for ELKP is designed to assist teachers in planning for an inquiry-based learning opportunity. This resource outline is to be sublimated with learning objects that your own class has presented in their interest of sound: where does sound come from, how can we make different kinds of sound? The time required and the direction of the inquiry-based learning activity will depend on the time that you can allocate to the learning activity, students prior knowledge, skill, and level of interest.

**Grade Level:** Kindergarten

**Strand and Topic:** Science and Technology

**Inquiry Focus:**

The time required depends on students’ background knowledge, skills set, level of interest, and any additional time required for completion of student work.

**Big Ideas**:

* Children are curious and connect prior knowledge to new context in order to understandthe world around them**.**

**Specific Expectations:**

**Specific Expectations:** **Key**

BC – Belonging and Contributing

SRWB – Self- Regulation and Well-Being

DLMB – Demonstrating Literacy and Mathematics Behaviours

PSI – Problem Solving and Innovating.

**Overall Expectations in the Kindergarten Program – Linked to this resource package – Sound**

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| Expectation | BC | SRWB | DLMB | PSI |
| Communicate with other in a variety of ways, for a variety of purposes, and in a variety of contexts. | included | included | included | included |
| Use the processes and skills of an inquiry stance (i.e., questioning, planning, predicting, observing, and communicating |  |  |  | included |
| Identify and use social skills in play and other contexts | included | included |  |  |
| Demonstrate an ability to use problem-solving skills in a variety of contexts, including social contexts | included | included |  | included |
| Demonstrate an understanding of the diversity among individuals and families and within schools and the wider community | included |  |  |  |
| Demonstrate literacy behaviours that enable beginning readers to make sense of a variety of texts |  |  | included | included |
| Demonstrate an understanding and critical awareness of a variety of written materials that are read by and with their educators |  |  | included |  |
| Demonstrate an awareness of the natural and built environment through hands-on investigation, observations, questions, and representations of their findings. |  |  | included | included |
| Demonstrate an understanding of numbers, using concrete materials to explore and investigate counting, quantity and number relationships |  |  | included |  |
| Measure, using non-standard units of the same size, and compare objects, materials, and spaces in terms of their length… and explore ways… through inquiry and play-based learning. |  |  | included |  |
| Apply the mathematical processes to support the development of mathematical thinking, to demonstrate understanding, and to communicate thinking and learning in mathematics, while engaged in play-based learning and in other contexts. |  |  | included | included |
| Investigate and explain the relationship between two-dimensional shapes and three dimensional shapes… |  |  | included |  |
| Develop a appreciation of the multiple perspectives encountered within groups, and of ways in which they themselves can contribute to groups and to group well-being | included |  |  |  |
| Demonstrate an awareness of their surroundings | included |  |  |  |
| Demonstrate an understanding of the natural world and the need to care for and respect the environment | Included |  |  |  |

Ministry of Ontario. (2016). The Kindergarten Program.

**Key Concepts:**

Sound, echolocation, pitch, vibration, indigenous, drums, musical instruments

**Sound**

**Where can we find sound?**

**Engage**

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| Spark interest in your students through nature walks, field trips, human interest stories, student personal connections, books. |

**Extended**

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| Observe and discuss different kinds of sound and how they happen.   1. How can we tell others about the things that we know? i.e., wonderwall, drawings using paper and iPad drawing apps, charts, knowledge circles 2. How can we learn from the experts in our class? 3. What can we learn from experts in the field? i.e., person-to-person interviews, guest speakers, Skype calls 4. Watch for students making personal connections. |

**Hands-on Inquiry**

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| Explore a variety of materials and exploratory tools. Provide students with the opportunity to question, critically think, and problem solve through free exploration and play-based learning.  Observe and document children’s thinking for future learning opportunities.  Provide children with good inquiry-based questions to develop critical thinking. |

**Big Idea**

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| How are different sounds made? |

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| **Cluster 1** | **Cluster 2** | **Cluster 3** |
| * Are all sounds the same? * Indigenous connection | * Sounds found in nature * Indigenous connection | * Making sound * Indigenous connection |

**Cluster #1 – Are All Sounds the Same?**

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| **#1 Invitation to question: How do we hear?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why is it important to hear? * How do people hear differently? * What would it be like to not be able to hear? * What are different ways you could communicate if you could not hear? * Why do we all sound different?   Conduct this learning through inquiry circles, individual or small group discussions.  Suggested hands-on inquiry-based experiments or activities   1. Have children investigate how they hear. 2. Through exploration, have children create different kinds of ears found on animals. Why are they different? 3. Have children wear earplugs and try to communicate to each other without sound. 4. Look at the ear and how it works. 5. Provide children with different sounds and no visuals. Have them problem solve to try to identify the sound. What strategies did they use?   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#2 Invitation to question: What is pitch?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * How are sounds different? * How do we make different sounds? * What kinds of materials make sound? * Why do different materials make different sounds? * What is pitch? * Why are different sounds important? * How is what you heard different from what you thought would happen? * Is the noise that is made different when you use the spoon and when you blow over the bottle? * Would it sound different if you used another material to hit the side of the glass or bottle? What could you use? How is the sound different? * How could you change the sound that is made? * How could you make the sound higher or lower?   Conduct this learning through inquiry circles, individual or small group discussions.   1. Have children play with metal spoons. Can they make different pitches? 2. Pitch experiment 3. Provide a variety of materials for children to explore different pitches. 4. Go outside and make sounds using different pitches with your voice.   Suggested hands-on inquiry-based experiments or activities  Facilitate and support extended learning.  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#3 Invitation to question: How do we hear using a telephone?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * What is vibration? * How do we hear using a telephone? * Why is the phone important in our life?   Suggested hands-on inquiry-based experiments or activities   1. Provide children with a variety of old recycled phones to take apart and investigate their workings. 2. Provide materials for children to make a phone invention. 3. Telephone experiment 4. Through play-based learning, provide children with the tools to set up a telephone store.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#4 Invitation to question: Indigenous connection - The Beauty of Silence**  Suggested inquiry questions- Your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * What is silence? * Why is it important to sometimes be quiet? * How could you make a quiet corner for yourself? * What things in nature are quiet? * Why would it be important for an animal in nature to be quiet?   Suggested hands-on inquiry-based experiments or activities   1. Go on a nature hike and look for things that are quiet. 2. Lie on the ground outside and just be quiet. Is this hard? What sounds do you hear? What sounds are loud? What sounds are quiet? 3. Talk about the importance of silence and reflection in FNIM culture- being one with nature.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

**Description of Activities**

**Pitch-in-a-jar experiment**

You can start this inquiry with a read aloud: “Some sounds are high and some sounds are low”. Collect a variety of glass bottles, such as pop bottles. You can also use wine glasses. Through exploratory investigation, children will fill the glasses to different levels using water. Using a metal spoon, children will gently tap the side of the glass or blow over the top of the bottle to create a sound. You can add food colouring to make it more visually appealing.

**Technology Links:**

* iPad App – Morton Subotnicks Pitch Painter – <http://www.theguardian.com/technology/2012/aug/04/50-best-apps-chidren-smartphones-tablets>
* K-12 flash, sound waves. Retrieved from: <http://science.k12flash.com/sound.html>

**Tin Can Telephone Investigation**

* <http://www.experiments-for-kids.com/school-science-for-kids-make-a-telephone-with-tin-cans/>

**Cluster # 2 – Sounds in Nature**

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| **#1 Invitation to question: How do animals use sounds to survive? – Echolocation**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * How do animals use sounds to survive? * How would animals use sounds if they could not see very well?   Suggested hands-on inquiry-based experiments or activities   1. Investigate how animals use sound to survive. 2. Echolocation experiment 3. Investigate different sounds that baby animals make to attract their parent. 4. Through play-based learning, provide children with different materials so they can dress up like different animals and use sounds to identify themselves. 5. TRIBES – barnyard babble 6. Have children build animal sound boxes. 7. Read *Stellaluna* by: Janell Cannon.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#2 Invitation to question: Walking tour – Let’s investigate**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why do different objects make different sounds? * How could we make that sound in our classroom? * Why is that sound different from this sound? * How would you describe that sound?   Suggested hands-on inquiry-based experiments or activities   1. Take children on walking tour at a local outdoor education centre, beach, or forest and have them explore the different sounds in this surrounding. 2. Record the sounds using an iPad. 3. Record different objects in nature that make sounds.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#3 Invitation to question: How do seasons affect sound?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why do things sound different in different seasons? * How would the snow sound under my feet? * What do the leaves sound like falling from a tree? * Why do leaves sound different in the summer and fall when I crunch them in my hand? * Why are sounds of nature quieter in the winter? * How can I test different sounds in different seasons?   Suggested hands-on inquiry-based experiments or activities   1. In the classroom, allow children to build their own nature scene for a particular season, demonstrating their understanding of different seasons and sounds. 2. *Polar Bear, Polar Bear, What Do You Hear* inquiry investigations 3. Provide children with different materials and have them explore how these materials could make sounds that are heard in different seasons.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#4 Invitation to question: Indigenous connection - Rain Stick**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why would an indigenous group make a rain stick? * How are rain sticks different and the same? * Why would you want a rain stick?   Suggested hands-on inquiry-based experiments or activities   1. Provide students with a variety of materials to create their own rain sticks. 2. Working collaboratively and using finger clicking and clapping, have children problem solve to create the sounds of thunderstorm. 3. Watch the rain one day. Dress and go outside and play in a gentle rainstorm. 4. Using a talking stick, share ideas about the sounds that are made from a rain stick.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

**Description of Activities**

**Animal sound boxes**

Description of experiment and materials can be found at <http://lifestyle.howstuffworks.com/crafts/animal-crafts/animal-activities2.htm>

**Rain Stick**

* Design #1 - Each child will receive 1 tube which they can decorate on the outside. With assistance, students either hammer nails or put pins into their tube covering the surface area in a pattern so that nails and/ or pins make a criss-cross pattern inside the tube. Cover one end of the tube with construction paper and then cover with clear tape. Add dried beans to the tube and seal the other end. Children can decorate the ends with pieces of tissue paper.
* Design #2 – You tube clip <https://www.youtube.com/watch?v=liXWv-3KLl8>

**Books**

* *The Listening Walk* by Paul Showers. Also available on YouTube, The Listening Walk by Paul Showers, retrieved from: <https://www.youtube.com/watch?v=uCs66HaouFU>
* *Listen, Listen* by Phillis Gershator
* *So Many Sounds* by Claire Chadwick

**Cluster #3 – Making Sound**

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| **#1 Invitation to question: What could that sound be?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why do you think the tins were covered with coloured construction paper and not something we could see through? * How might you create your own guess as to the sound in the can? * Why do you think that is the object in the can? * Where might you hear that sound in nature? How do you know?   Suggested hands-on inquiry-based experiments or activities   1. Provide students with a variety of hidden sounds in different containers. 2. Provide students with a variety of materials for them to create their own guessing game. 3. Allow children to record different sounds on the iPad and have other students try to guess that sound.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#2 Invitation to question: How can we create a band?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why do different instruments make different sounds? * Why is music important in your life? * What makes sound change? * How can the sound of your instrument be described? * How does the sound make you feel? * Why are you making that instrument? * What could you do to improve on your design? * What other materials could you use to get a different sound? * How would you make a guitar from a cereal box and rubber bands?   Suggested hands-on inquiry-based experiments or activities   1. Visit the local high school music department and allow children to explore different musical instruments. 2. Provide children with the opportunity to experiment through play-based learning with different musical instruments. 3. Provide children with a variety of recycled and art materials to build their own musical instruments. 4. Through play, children can form their own band to perform for parents or school community.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#3 Invitation to question: What would a sound center look like that we could share?**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why is it important to share our knowledge of sound? * Why do we need different materials in our sound center?   Suggested hands-on inquiry-based experiments or activities   1. Have children design and build a sound center in their classroom. 2. Have children design and build a sound center in their playground to share with other students. 3. Allow children to explore natural materials that they find in nature to build and create a sound center in their classroom. 4. Create an invention center so children can create a new sound.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

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| **#4 Invitation to question: Indigenous connection - Drums**  Suggested inquiry questions- your questions will vary depending on your students’ interests and the direction in which they take their inquiry investigation.   * Why did you pick that animal? * How do you have a connection with that animal? * Explain how the drum sounds? * Why does the drum sound like a heartbeat? * Why might this sound be important to Indigenous people? * How does the sound of the drum make you feel?   Suggested hands-on inquiry-based experiments or activities   1. Provide students with resource materials so that they can create a variety of drums, including a sonotube drum. Children can paint Indigenous pictures on the outside. 2. Through play-based learning, allow children to create a drumming group around a Pow Wow. 3. Read a FNIM book about drumming to children. Allow children to question and discuss different aspects of the book. 4. Invite a First Nations drumming group to your classroom. 5. Show a video of First Nations drumming and have children share their understanding.   Facilitate and support extended learning  Introduce a variety of fiction and non-fiction books related to topic. |

**Description of Activities**

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| **Guess That Sound**   * **High tech** - Interactive game from Magic School Bus where students identify a variety of noises. <http://www.scholastic.com/magicschoolbus/games/sound/index.htm> Can be used on your smartboard or PC / netbook. * **Piiig Labs** – This is an iPad app that will help to develop your students’ creativity and understanding of different science experiments without the mess. It is virtual science experiments for kindergarten aged children. The app contains experiments in light using circuits, a sound box creating different animal sounds, a volcano teaching how to mix colours, vortex experiment, radio and an electronic musical instrument where children can not only create music but can also build a walkie talkie that can be shared between two devices. Available at <https://itunes.apple.com/us/app/piiig-labs-science-experiments/id735909511?mt=8>   **Echolocation**   * Play a short clip of <https://www.youtube.com/watch?v=RwGzse0z718> "Click, squeal, whistle and squawk!" Learn about dolphins, their communication, and echolocation in this fun, educational, sing-a-long video for kids by BIRDSONG and the ECO-WONDERS. Featuring the song "Clickety-Clack" from their CD "IF I WERE A FISH” * Echolocation game - Have one student wear a blindfold. Start with students in a circle around this student. Point to particular student and have that student snap his/her fingers or gently clap (which ever motor skill they can do). Have the student wearing the blindfold point to the person snapping their fingers. Repeat with different students. To extend this learning activity, place students in different spots around the room or take this activity outside. Will students be able to filtre out outside noise and focus on the specific sound they are to listen for? Make   connections to animals that use echolocation in their survival such as bats, whales and dolphins.  **Indigenous Connection**   * *The Dancing Drum: A Cherokee Legend* by Cohlene Cohlene * *Jungle Drums* by Graeme Base * First Nations drumming. You tube <https://www.youtube.com/watch?v=trqUyZZc9cQ&list=PLigtAkVcx917keZEmL20BduQgOcldOuQe> |

**AFL (Assessment for Learning)**

AFL (Assessment for Learning) – At the ELKP level, AFL documentation assists teachers in the collection of learning of their students by recording oral and written learning through prior experiences, listening and collaborative sharing of ideas, students theories and insights of their understanding of the material, and, ultimately, the decisions they make independently or as a group about future learning opportunities (Gandini, 2011). AFL at this level is the documentation of the student’s metacognitive understanding of their own learning (Gandini, 2011)

1. Using your IPad, you can down load iDoceo, an educational assessment organizer to keep individual photos and video recordings to assess personal growth, learning, and development. You can find this app at <https://itunes.apple.com/ca/app/idoceo-teachers-assistant/id477120941?mt=8> there is a small cost.
2. Using the iPad and free app SeeSaw to gather, collect, and document data using voice, pictures, videos, and notes.
3. Capture student learning and share this learning with your students using animoto. This program allows you to easily scrapbook pictures you have taken of your students. You can then discuss independently or as a group the learning that was taking place. You can find this program at <https://animoto.com/dashboard>
4. Create portfolios of students work. Take pictures of your students’ work and collect written materials. These samples of learning can go into individually marked binders (you can also use clear page protectors) so that students and parents can review the learning throughout the year. This will be a collection of student learning that you will be able to access for report card writing and interviews. You can also keep a record of these personal observations and oral communications in a separate file for your references and assessment practices.

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