Nature Detectives: Collect and Compare	JK/SK

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Description	**Materials**
Students will engage in hands-on data literacy exploration by collecting data using a variety of non-invasive techniques, such as taking photos or rubbings of natural items, and comparing the data collected by sorting and organizing using a variety of tools, comparing/contrasting items based on identified attributes (large/small, square/circle, green/brown, etc.). They will also practice representing their data and communicating their findings, all while engaging in the environment in a respectful and caring way.	- Clipboards, paper, crayons - Devices for taking photos (e.g., iPads, cameras) - Hula hoops, buckets, trays, coloured mats or similar for sorting - Manipulatives for building simple graphs - Optional: laminated attribute/sorting cards
Explicit Teaching Points • Attribute/feature: this is a characteristic or property of an object that we can observe, describe, or measure. Think shape, quantity, texture, colour. Attributes are the basis of sorting and classifying. You can also explain it to your students by talking about an attribute as the way something looks or feels, or about the things we notice about an object. • Sorting: the process of organizing objects into groups based on a shared attribute. Sorting is essential for developing pattern recognition, data literacy, and is a great way to practice numeracy	**Specific Expectations** **D23.1** identify similarities and differences between local environments **D23.2** describe what would happen if something in the local environment changed **D23.3** describe ways in which they care for and respect the environment **C17.2** demonstrate persistence while engaged in activities that require the use of both large and small muscles

skills by counting or qualifying based on size, length, etc. Your students might understand it best by talking about putting things that are the same together, and talking about sameness. • Recording & Representing Data: we record data when we document our observations, measurements, or other collected information in a structured and organized way. Tallies, drawings, photo galleries, and graphs are all ways we can record and communicate data. Your students can record data by drawing, taking photos, and counting and recording their count; all of these help us to ***see*** our data. They may choose to represent their data using concrete graphs or picture graphs. • Respect for the environment: Demonstrating care, stewardship, and responsibility in all spaces we occupy, especially natural spaces, is an essential element of citizenship and building character. This helps build their sense of connection to the environment, and creates great habits like reducing waste, preserving habitats, and making sustainable choices. You can describe it to your students like they are taking care of nature the way they take care of a friend, being gentle, keeping it tidy, and helping keep the Earth healthy!	

Provocation (Introductory Book, WOW Demo, etc)

Teacher read-aloud - Picture book focusing on some of the things we can find while exploring outside (e.g. “It’s a Mitig!” by Bridget George).

Learning Plan

Introduction

After read-aloud, introduce the students to activity by using explicit teaching points to describe the outdoor data collection, sorting, and recording data. Playing the accompanying video to demonstrate respectful ways to collect data from natural sources will be a helpful tool to help your students understand the expectations in being nature stewards, and differentiate between taking and observing. Introduce your students to the sorting materials to be used (i.e., labelled graphs, buckets, hula hoops, etc.), and use similar tools to sort the class based on simple attributes that the class may choose (i.e., long or short sleeves, laced or Velcro shoes, etc.). Optional: use photos or name tags of children as examples of representational data instead of actually sorting the actual children, to create connection in their data collection methods such as taking photos or rubbings.

Collect Data Outside

Bring the class outside to outdoor learning area (schoolyard, treed area/forest, garden space, etc.)

Remind students that they are collecting information, but not the actual objects. You may choose to demonstrate expectations by showing them how to take a rubbing, pointing out examples of objects to take a picture of or draw, or creating a tally sheet. Remind them of the things they saw in the video, and the example the character in the video gave of being respectful.

Sort the Collected Objects

Either outdoors or indoors, give students a variety of tools to sort their objects. This may include two hula hoops or similar, buckets or containers, coloured mats, sorting trays, or labelled tables. Remind them that an attribute is something we notice about an object, and to sort by putting similar things together. Ongoing prompting, such as “What attributes are you

sorting by?" and encouraging comparison will be helpful, in addition to referencing the whole-class sort that started the lesson.

Represent the Data

Explaining that graphs help us to see data, start by using the photos from one student's data set to create a concrete graph. You can then demonstrate representing the same data using manipulatives, such as coloured blocks, and by making a simple bar graph of the same data. Refer to the explicit teaching points for recording and representing data, and be sure to include clear comparison language (i.e., more, fewer, same) to make connections between the quantities. Students will then represent their own data using a method of their choosing, either alone or in small groups using one student's data set.

Share, Compare, Consolidate

Invite students to share their graphs or data sets with the class. Encourage data literacy by asking questions about the data collection method they chose, the attributes they chose to sort their data, and what their graphs tell them about the data they collected. Highlight respectful data collection methods, clearly distinguishable attributes, and understanding what their graph tells them (i.e., which group has more or less). Reinforcing new vocabulary such as attribute, data, sorting, graph, etc. will allow students to demonstrate their learning in measurable ways.

Consolidation/Extension

- Encourage students to re-sort the same data (rubbings, photos, etc.) using new attributes. If they sorted by colour the first time, maybe they can sort by shape this time!
- Create an indoor data wall with your photos, rubbings, and graphs. Encourage your students to visit the wall and ask questions, share their observations, and make new connections!
- Use one student's data set to create a graph as a class – talking about data classification and reinforcing the explicit data literacy points as a whole group while letting the students explore outside and practice their environmental stewardship!
- Turn sorting stations or data points into pattern-building stations. Students can build a pattern using all of the photos of leaves their classmates took!

Notes/Context/Reminders • If you're limited on outdoor space, focus on the details: textures, colours, and shape can be found on even tiny or limited items! • You can help guide students by encouraging them to look for certain attributes – colour and shape are great starting points! Labelling their sorting containers or colour-coding them can help support emerging data scientists sort their findings! • Ensure this activity remains accessible by giving lots of options in data collection methods, selecting environments that allow all students to participate, and encouraging teamwork to ensure all of your students can practice their data literacy and environmental stewardship skills.	**Assessment and Evaluation** Pedagogical Documentation – observation, student questions, action plan for next steps Success Criteria *Students will:* • Identify at least one way they can be caring and respectful for the environment • Collect data through observation/environmentally-friendly collection methods • Sort their collected data into two named categories based on one identifiable attribute • Represent their data using picture graphs or simple concrete graphs

• Students may need some practice not picking up and taking natural items – remind them that we are collecting information, not objects! • If you're looking to include more Indigenous perspectives, reach out to the Indigenous Education Lead at your school board who can help connect you to resources, community members, and other authentic and locally relevant relationships that can help enrich your programming.	