Grade 8
Example for Place-Based Learning

GRADE 8
Big Ideas for Science

B BIOLOGY

Life processes are performed at the cellular level.

C CHEMISTRY

The behaviour of matter can be explained by the kinetic molecular theory and the atomic theory.

P PHYSICS

Energy can be transferred as both a particle and a wave.

E EARTH SCIENCES

The theory of plate tectonics is the unifying theory that explains Earth's geological processes.

HCTF Education

This Example focuses on one science discipline: E Earth Sciences.

PLACE: Geological explorations in your area, areas of exposed rock and stratifications, (looking at a deep soil column for evidence of volcanic ash, should this apply to your region)

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1 Experience Place

TONE: open-minded, unburdened, curious, playful

Prior to guided interpretation of the geology of the area openly explore the site, making note of particular structures in the exposed rock, looking for differences in colour, texture and alignment (hand lens could be useful for this). Make notes of any mountains in view. Experience a guided interpretation of the area by a specialist in the geological story of the area.

- How do rocks inform us of the past?
- What local landforms inform us of geological activity?
- What is the time frame of these events?
- How is this information known?

2 Questioning and Predicting

TONE: more focused, curious, reflective

KWL - Dialogue as a class on information gleaned from experiencing place with the resource person, and present information known among the students. List this Known information. Based on student observations and curiosity, dialogue with them on what questions have emerged. List these Wonderings as questions for students to investigate. Give consideration to the following questions:

What is Plate Tectonics and why is it a theory? First People have lived in the region for 1000s of years (literally the first people). In what ways do oral histories and stories about geological events contain important understanding about Earth's dynamic history? How does First Peoples' knowledge inform geologists about the past? What is the driving force in Plate Tectonics? What kind of phenomena of plate tectonics are present or have occurred in your area in recent history?

3 Planning and Conducting

TONE: creative, restrained, calculating, collaborative

KWL - Brainstorm with students the ways in which they can Learn about the answers to their questions. Consider sources and methods

for gathering information and evidence, including the field visit, research, and sources for understanding First People's perspectives. See, Science First Peoples Teacher Resource Guide, Grades (5-9), Unit 6, for source materials *http://www.fnesc.ca/resources/publications/*.

Watch: Plate Tectonics in Action (2.30 min) *https://www.youtube.com/watch?v=Cm5giPd5Uro*

4 Processing and analyzing data and information

TONE: observant, methodical

Experience and interpret the local environment. Apply First Peoples' perspectives and knowledge. Construct and use a range of methods to represent information, including tables, graphs, keys, models and digital technologies as appropriate. Use scientific understandings to identify relationships and draw conclusions. Consider what energy drives the plate tectonic action. What kind of energy transfer is involved in plate tectonics? What kind of plate boundary was involved in your area? How are earthquakes and volcanoes a release of energy? What is the significance of the 1700 Cascadia Earthquake?

Consider using Pocket or Zotero to compile and analyze the information.

5 Evaluating

TONE: discerning, reflective, interdependent, collaborative

Reflect on the investigation methods and demonstrate an understanding of the quality of the information collected (consider qualitative and quantitative). Identify possible sources of error and suggest improvements to the investigation methods. Demonstrate an awareness of any subjective and cultural bias brought to the investigation.

Consider the dovetailing of the two sources of information, First Peoples and scientific, in understanding the 1700 Cascadia Earthquake. What influence did the two different sources of information have?

6 Applying and Innovating

TONE: creative, open-minded, interconnected, engaging

Get ready for the next quake! Determine if there is a plan in place at home (what supplies are on hand, i.e., food, first aid, water, camping gear) and in your community in the event of the Big One. Get involved and make a plan if there isn't one. Prepare a grab'n go bag for yourself. Collaborate on what should go in it. Cooperatively plan an event to encourage others to prepare their own grab'n'go bag.

7 Communicating

TONE: confident, engaging, interpretive, expressive, sensory, using technology

Using digital technology express the story of the history of phenomena caused by plate tectonics in your place, including the valuable knowledge of First Peoples' oral histories of past geological events, forecasts of predicted future events, and action for preparedness. Communicate ideas and findings using scientific language and representations.

Use your choice of digital technology, such as:

- Focusky
- Slides
- Slide Bean
- Projeqt
- slidedog.com