

## Geoscience Lesson #5: Paleontology

Topic: Fossils/Museum Tour (FAMILY DAY!)

Total Time: 50 minutes

Location: 245 Wallace/Museum

### Required materials:

- Cardboard box lids filled with clay (6)
- Expendable shells and related things that can be buried in clay
- Some water to make the clay cohesive
- Tools used to dig in clay:
  - brushes, chisels, tweezers, nails, etc.
- Some examples of real fossils:
  - Obtain show pieces from Bob Elias:
    - pyritized sample
    - polished sample
  - Try to obtain (borrow) a trilobite sample - there is one in Brenda's office
  - A box of junk fossils that are similar to the ones buried in the clay, but clean
- From drawers, samples of Coal
- Key to museum (available from Brenda Miller, geology office)
- Museum activity sheet (~30 pages/group)
  - Activity sheet should contain 4 questions, like:
    - How many Trilobites are in the display cases?
    - How old is the Gorgosaur?
    - What is the age of the largest Trilobite?
    - Find the name of one purple rock or mineral.
- Pencils (~30/group)

### Several days before lesson:

- Add shells to clay in box lids, with some water to let clay harden around the fossils

### Class Setup:

- Move projectors out of the way
- Put two boxes with clay on each of the front three tables
- Make sure there are enough chairs at these tables for 10-12 people to sit in each row - exceptionally large groups may not fit in these three rows
- Lay out a variety of tools at each box - if clay is particularly wet, put paper towels out
- Put display fossils, clean fossils and coal on display at front desk
- On the board:
  - 5 rules (Respect yourself, Respect other, Respect the environment, Take responsibility for your actions, and Have fun!)
  - Education requirements:
    - High School Graduation
    - Take Biology, Chemistry, Geography
    - Go to University: U of Manitoba has a geology program
  - Job name: Paleontologist
    - If artistic skills permit, try to draw a trilobite on the board
- Turn on lights in museum
  - There are light switches inside for the overhead lights in the display case area
  - The remainder of the lights are outside the museum in a breaker panel - this panel is unlocked

Before entering class (5 minutes):

- Quick lesson summary before class begins
- Make sure to talk to parents as well as kids
- Explain that hands may get muddy today, but that the washrooms are down the hall (just look for the red walls)
- Make sure that they sit in the front three rows, if there is space
- Remind them that a museum tour is to follow

Lecture section (15 minutes):

- Review rules - you may want to leave the rules section blank on the board and ask the kids if they can fill it in for you. Since this is the last class, they may want to impress their parents.
- Review education requirements specific to paleontology (ask the students if they remember the general geology ones from previous lessons, and have them compare the differences)
  - Need biology to understand paleontology
  - Need chem to understand the breakdown of living things as they turn into rocks
  - Need geography to be able to understand maps, and think about things in terms of their position and orientations
  - But, you don't really need to know the human geography portions, like history, etc.
- Review for the sake of the parents, ask the kids questions: What is Geoscience?:
  - Geology, Geophysics, Gemology and more!
  - One of the two main suppliers of raw materials for the world. "If it can't be grown, it has to be mined."
- What is Paleontology?:
  - The study of ancient life, as seen in fossils
- What are fossil fuels?:
  - Show pieces of coal, and explain how it exists in a limited supply only
  - Not all dead creatures turn into fossil fuels
- How are fossils preserved?:
  - Creature dies in mud or similar
  - Mud hardens, then creature/plant/etc decays, leaving a space behind
  - Space is later filled in with something else
  - Mention trilobites specifically, as that will be useful in the museum portion

Activity (15 minutes):

- Have kids and parents work to uncover fossils in the clay
- Encourage proper technique rather than simply combing the clay with your hands
- Explain how this would normally be done in rock, and you don't want to break valuable fossils
- For those done the activity, or simply observing (some parents), have them come to the front to see some of the display pieces in order to keep them active
- Many parents and kids will have questions
- When most kids have found fossils, ask them to help you rebury them for the next class
- Recommend that everyone who got their hands dirty should wash before going to the museum

Museum Activity (all remaining time):

- After washed hands, get two kids to help you hand out the activity sheet and pencils for the museum

- Warn them about the alarmed dinosaur
- Unlock museum, and let people explore - activity sheet helps kids engaged, but most adults would rather ask questions
- Most kids will want to get positive reinforcement on the activity sheet, trying to be done first, and such - don't give right/wrong answers, simply encourage them to explore once they are finished
- Ensure that people don't leave anything in the museum upon exit
- Collect pencils, and have the kids recycle unwanted activity sheets (grab paper recycling bin from geoclub or loading docks)

Additional instructions (last class of the day):

- Career Trek term evaluations happen during the last class of the day - get students to fill out evaluation forms while in the museum

Teardown (end of day):

- Wash tables down with wet paper towels
- Erase board
- Replace projectors