University of Alaska Museum of the North
Directed Discovery Field Trip

Museum Science
4th-6th Grades
1½ hours

Introduction, Welcome & Rules (15 min)
Gather the class in the Education Center to welcome them to the museum, remove coats, review museum rules, & divide into groups. Introduce yourself and other docents. Tell the class what will happen during the tour.

Give a bit of background on museums and discuss how we collect and research things. At this museum we collect rocks, fossils, birds, mammals, fish, insects and more! Utilize hands-on objects to illustrate some of the types of things we collect. Tell them they will see some of our collection in the galleries but most of it is stored in the basement. Museum collections like ours are used by people all over the world to learn about things.

In order to sort living things and make collections, scientists must have a common language and way of doing things. Taxonomy is the science of classification. Living things are sorted into their Kingdom, Phylum, Class, Order, Family, Genus, and Species (mnemonic: ***K****eep* ***p****ond* ***c****lean* ***o****r* ***f****rogs* ***g****et* ***s****ick)*. Sorting is important to science whether you're looking at rocks and minerals or animals.

In order to sort things, scientists need to be good observers who pay attention to details. Today we're going to practice observing and see what questions we can come up with. We'll also learn how to sort.

I. Observe and Collect *(25 minutes)*
This half of the class will search for objects in the Gallery of Alaska. The students will be allowed to wander and find items of their own choosing. You may have them work in pairs or individually. If they work in pairs, they will still need their own paper so they can both draw.

The goal is to get the students thinking about relationships between objects and how they might be sorted or classified. Docents should pass out writing boards, pencils and worksheets.

II. Question and Classify *(25 minutes)*
This half of the class will practice classification skills in the Education Center with a docent. They will also spend time observing and coming up with questions about skulls.

How do we classify something we've never seen before? Pass out the creature cards. Briefly discuss possible sorting options based on observable characteristics. Then, pass out the example key and have students identify their creatures using the key. Explain how keys are used by scientists to identify species. However, someone had to develop the key! Sometimes the species isn't on the key (may be never identified). Scientists learn to pay close attention to details and come up with questions that help them learn about the organisms they are looking at, even if they don't know what it is!

Pair students up and pass out animal skulls. Only tell them it is a bone from an animal. Don't tell them it is a skull (most will know though!). Ask them to come up with ~5 things they can observe about this object and ~2-3 questions they have. After a few minutes, discuss what they noticed and have questions about. Talk about how we might figure out some of these questions.

Talk about teeth and see if they can make guesses about what the animal eats.

- Herbivores lack canine teeth.
- Carnivores have canines and sharp molars.
- Omnivores have canines and molars are wider or less sharp.

Ask if any other groups have a skull similar to theirs. Discuss the similarities and differences between the skulls. Some examples:

- Rodent skulls have orange enamel on the incisors. This is harder than the back of the tooth and so the tooth is self-sharpening. Rodent teeth grow throughout their lives.
- Predators have eye orbits that face forward. This gives the animal binocular vision which provides depth perception.
- Prey animals use peripheral vision to look for danger. Their eyes are on the side of their head.

Use the discussion about similarities and differences to discuss sorting and classification. Pull out a bird skull and ask if they would put this in the same group. No! It has a beak! So, from just the skull we can already sort these animals into birds and mammals or predators/prey or herbivore/carnivore, etc.

Mammal Hunt & Find *(15 minutes)*

The class will be given time to wander around the gallery hunting for mammals illustrated on a "family tree." They will also have questions about how the animals are related to each other. Pass out writing boards, worksheets and pencils.

Wrap-up & Review *(10 minutes)*

Gather the class back together in the Education Center to review the field trip and hand out coats.