

Reaching Potential: Listening and Speaking Videos



Geographical Processes

Video Transcripts



THE UNIVERSITY OF BRITISH COLUMBIA

English as an Additional Language Programs

Okanagan School of Education

Reaching Potential: Listening and Speaking Level IV

Post Secondary Education Skills: Upper Intermediate English

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Transcript

NICOLE: Hi everyone, I am Nicole, and this is Don. And we're going to be talking about geography found in the beautiful Okanagan. Currently we're on the rail trail and this is Kalamalka Lake. Um before getting started though we'd like to acknowledge that we are currently on unceded territory of the Syilx Peoples.

DAN: So unceded territory means that the land was never ceded or legally signed away to the crown or to the Canadian government. And traditional territory is the land identified by the First Nations as being the traditional grounds for their activities both now and by their ancestors.

DAN: Wow the colour of the lake is gorgeous today.

NICOLE: Yeah, it looks even better in summer.

DAN: Oh, yeah? I wonder why that is.

NICOLE: As the water gets warmer and warmer, the limestone crystallizes. And this process is called marling.

The sunlight reflects the tiny white crystals in the water called marl. Marl is formed when the dissolved calcium carbonate from limestone in the lake crystallizes. After forming, eventually the marl sinks into the water and stops reflecting the sunlight. The lake colour we perceive at any moment is due to the amount of marl near the lake surface. Water temperature plays a critical role because marl forms faster in warmer water.

Marl lakes are actually quite rare. This lake, Kalamalka, owes its calcium carbonate to limestone deposited by the receding Fraser Glacier over 10,000 years ago.

In Kalamalka Lake, the process of marling is best formed in mid-summer when the photosynthesizing phytoplankton raises the pH balance of the lake. This improves the water quality as the crystallization of calcium binds the nutrients in the water and turns it into marl. The reduction in the over-abundance of lake nutrients results in a decline in algae and the water is more vibrant and clear.

NICOLE: Speaking of this pretty coloured lake... Do you know what kind of lake it is?

DAN: Yeah it's considered a fjord lake. A fjord lake is a lake that forms in a valley that was cut by a glacier. When people talk about fjords, they usually talk about those deep inlets of the ocean where the mountains descend deep down into the water. A fjord lake is basically formed by the same process, but instead of happening along the coast, it happens inland.

NICOLE: Wooh, that's really interesting. Does that mean that this lake is really deep? It looks deep...

DAN: Yeah actually it's it's very deep. The deepest part of the lake is in the southern subbasin, which is 146 metres down!

NICOLE: Wow 146 meters!

DAN: Yeah it's um yeah its pretty amazing how deep it is.

DAN: Let's "dive into the deep end" about lake basins! The bedrock below Kalamalka Lake was carved 10,000 years ago by the movement of the Fraser Glacier. The lake's thick flat layer of sediment came from the silt suspended in the glacial water which settled to the lake bottom. So, the southern subbasin is the trench part of the lake caused by glacial debris that acts as a dam, trapping water and forming the Kal lake that we see today.

DAN: Jee.. I I remember the last time that I was here, the water was actually a lot, a lot higher.

NICOLE: Yeah, I think that's from the melted snow run off –

DAN: Oh yeah? K.

NICOLE: Hey look Don you can see the weathering and erosion here. Now that the water's receded you can tell where it's eroded. That must have been why the rail trail was closed. This right here is where they were doing erosion mitigation work, where the fencing and the rods are.

Weathering is the breakdown of rocks and minerals. Once this weathering process occurs something called erosion happens. That is when the rock and minerals bits and chunks, that were weathered, get transported away. One extreme example of this is in Arizona USA... the Grand Canyon which is 446 kilometres long and 1600 meters deep. There is no rock on Earth that weathering, and erosion cannot affect. There are two types of weathering, one is mechanical and the other is chemical. The weathering we see on the Rail Trail is mechanical weathering. Mechanical weathering is another way of saying physical weathering. When using the rail trail as an example, we can see that water is the key agent of weathering. The liquid water can seep deep down into cracks and crevices. Then, because the winter here is so cold, when the temperature is freezing, ice forms and acts as a wedge to rip apart the rock. When the ice and snow melts, the water acts as erosion and carries it away. This process is called frost weathering or more scientifically, cyrofracturing.

DAN: Nicole, check out up on the hill up there. Do you see all the all the yellow flowers up there?

NICOLE: Oh yeah I see those flowers. They are named Arrowleaf Balsamroot. People also call them Okanagan Sunflowers. They used to bloom heavily on hillsides of the Okanagan Valley and Syilx people would harvest these plants too.

NICOLE: Hey Don, how old do you think this rock is?

DAN: Yeah Well, the the Western rock, all this western rock face, it goes back to the Mesozoic era – that is about 250 to 65 million years ago. That's the age of the dinosaurs.

NICOLE: Oh wow!

DAN: Yeah, it ah it seems pretty brittle doesn't it?

NICOLE: It sure does. That's because this rock is on a fault line that has been moving for tens of millions of years. There is actually a fault that runs through the Okanagan Valley beneath Kalamalka Lake. Each year, seismic activity in the Okanagan Valley results in several earthquakes on the west side of the Okanagan Lake.

DAN: Woah,? Earthquakes? I I had no idea. Are they uh are they big earthquakes?

NICOLE: No no don't worry. They're small. They're only about a 4 on the Richter Scale.

DAN:Ok well. Anyways standing underneath this cliff ..umm.. better keep moving.

NICOLE: Yeah, let's get out of here.

DAN: K.

NICOLE: An earthquake is when two plates suddenly slip past each another. The surface where they slip is called a fault plane. A Richter's magnitude scale is the measure of the strength of earthquakes from the seismic movements. The scale rating of 2-4 is minor or light, 6-7 is strong, and 8 and 9 are classified as major or great. Due to the tectonic plate activity over the last 40 million years, there is scientific evidence that there is 50 to 100 km of horizontal movement along the fault line on the rocks we just saw.

DAN: It's also worth mentioning that the various coastal mountain ranges of North America were formed in stages by the movement of tectonic plates. Through this process of continental drift, various micro-continents and island arcs were forced into the western side of the continent. Crumpled up, they became distinct mountain ranges. Looking at a map of the mountain ranges, you should notice the north-south alignment of North America's mountain ranges, and that many of the ranges are composed of different rock types. While some debate exists as to where one mountain range ends and another begins, the Okanagan region is said to be in the northern end of the Cascade Mountain range, with the Columbia

Mountains, a sub-range of the Rocky Mountains to the east, and the Coast Mountains to the west.

NICOLE: So if those western rocks over there are dinosaur old, what about these Eastern rocks?

DAN: So those eastern rocks, those are the youngest rocks in the region. Those are formed from basalt and they form the hills and ridges that go from Lake Country all the way to Vernon. This basalt rock was formed 10 to 15 million years ago from volcanic magma that erupted and flowed through the valley. And under that basalt were ancient river gravel deposits that actually contained gold.

NICOLE: Gold?! Wow! Should we go mining for gold?

DAN: Well it's hard to believe but all the way from the south all the way North to Alaska, every nook and cranny has been thoroughly mined for gold.

Nicole: Awe that's too bad! But I think this view is worth its weight in gold!