Visit of students and teachers from Poland to Iceland

On Sunday, September 10th the group arrived at 8 o'clock in Keflavík airport after an early start in Debica. We spent the day on an excursion in the Reykjanes peninsula, guided by Helmut Hinrichsen, who is an experienced tour guide and passionate bird watcher. Our first stop was at the bridge between the continents. Then we went to the bird cliffs at the old lighthouse at the tip of the Reykjanes peninsula. After having listened to the surf at the shore, we had a lunchbreak in the fisher town *Grindavík* and finally we walked to the new lava that flowed during the volcanic eruption on Reykjanes peninsula in 2021.

The Bridge Between Continents, also known as "Eurasian Bridge" or "Brú milli heimsálfa" in Icelandic, is a unique geological site located in Iceland. It is not a traditional bridge with a roadway but rather a symbolic footbridge (fig 1.) that spans a small fissure in the Earth's crust, connecting the North American and Eurasian tectonic plates.



Figure 1. Holding up the bridge between the continents.

The Bridge Between Continents marks the meeting point of the North American and Eurasian tectonic plates. These plates are two of the Earth's major tectonic plates, and they are slowly moving apart at a rate of about 2 centimeters per year. This movement is responsible for the geothermal activity and volcanic features that are prominent in Iceland.

The bridge itself is a small pedestrian bridge (fig 2.) made of wood and steel, spanning the fissure between the two tectonic plates. It is a popular spot for tourists who want to stand on the bridge and straddle the gap between the continents, symbolically spanning the divide between North America and Europe.



Figure 2. Crossing the bridge.

While the bridge itself is relatively small, it holds great symbolic significance as a physical representation of the geological forces that have shaped Iceland and continue to shape the Earth's surface. It is a reminder of the dynamic nature of our planet and the constant movement of tectonic plates.

Visiting the Bridge Between Continents is not only an educational experience but also a unique opportunity to witness the effects of plate tectonics up close.

Reykjanesviti is a prominent lighthouse located on the southwestern tip of the Reykjanes Peninsula in Iceland. It is not only an essential navigational aid but also a popular tourist attraction due to its scenic location and historical significance. Here are some key details about Reykjanesviti:

The lighthouse has a rich history dating back to its construction in 1878. It was the first lighthouse in Iceland to be powered by electricity, which was a significant technological advancement at the time. The original lighthouse was a wooden structure, but it was replaced by the current concrete tower in 1929.



Figure 3. Listening to the surf.

Reykjanesviti plays a crucial role in guiding ships and vessels through the challenging waters around the Reykjanes Peninsula. Its location on a rocky coastline helps ships avoid dangerous reefs and navigate safely.

We enjoyed the stunning coastal views from the cliff and the stone shore underneath the cliff.



Figure 4. Taking in the view and sounds of waves.

The new lava from the eruption 2021. An eruption began on March 19, 2021, at the *Geldingadalur* valley near Mount Fagradalsfjall. It marked the first volcanic eruption in the Reykjanes Peninsula in over 800 years. Since then, there have been two shorter eruptions. The hike to the border of the lava field from 2021 is short and accessible, so we used the opportunity to experience walking on, looking at and even touching warm lava (fig.5.).



Figure 6. The new lava in Merardalur.

Figure 5. Feeling the warmth of the new lava.

Finally, we arrived in Hveragerði, where Menntaskólinn í Reykjavík has a house; *Menntaskólaselið*, hereafter called *Selið*, where the group stayed for the next couple of days. After having stopped at the supermarket to buy food for a three day' s stay in Selið, we installed ourselves in the house. Thereafter we went to the geothermal swimming pool *Laugaskarð*, where we would become frequent guests during our stay in Hveragerði. The hot pools were of course popular to sit and relax



in, but the cold pot was also an attraction for the toughest ones.

Figure 7. Starting the hike from Selið.

This day's workshop included an Introduction to the project financed by EEA funds. Rules, participant's obligations, legal regulations and activities of funds.



On Monday 11th we had a good breakfast in Selið. The students cooked delicious porridge, and everyone made a lunch pack for the upcoming hike. A group of 55 students and teachers from both schools, started from Selið towards the valley *Grensdalur*. The hike was led by Helmut Hinrichsen.

We had to wade a river to get to the valley, and that was a refreshing and amusing adventure, a first-time experience for many participants.

Figure 8. Wading Varmá-river



Figure 9. Measuring the temperature on the ground

We had with us some steak thermometers to measure the temperature of the ground close to the hot springs. We also took eggs with us to boil in the hot springs. They were truly delicious. After cooking eggs and enjoying the hot springs, we continued into the untouched valley and climbed up to a mountain ridge that separates *Grensdalur* from the neighboring valley

In *Grensdalur* there are many hot springs and we had to be careful not to step on the ground where it was thin.



Figure 10. Hot spring - egg boiler



Reykjadalur. Reykjadalur has become a popular tourist attraction and on this day, there were many tourists in the valley. Through the valley a hot river flows, optimal to take a bath in, and so we did.

Figure 11. Almost the whole group of 55 pupils and teachers.

We ended this day, like the one before in the geothermal swimming pool in Laugaskarð, some relaxing the hot pools, others, still not worn out, jumping from the springboard into the pool, and still others researching their cold tolerance in the cold tub.

The theme of this day's workshop was pollution with emphasis on air pollution and conservation, influence on the environment and humans, integration activities.

On Tuesday 12th there were integration activities under the supervision of Ellen and Lovísa, biology teachers of Menntaskólinn í Reykjavík. Thereafter the microbit computers were assembled. It was very convenient that the Polish pupils had already learned how to assemble the computers and also the manual for the assembly and basic programming had been translated to Icelandic. On this day, we had pizza in Selið and after lunch the group was invited to the horticultural school in Hveragerði.





The title of this day's workshop was: We get to know each other - integration of project participants, creation of task groups.

On Wednesday 13th we packed our luggage after the third porridge breakfast in a row, tidied up the house and left for an excursion to the Golden Circle. Now, Helmut couldn't join so Jóhanna took the guide's seat.

The Golden Circle is a popular tourist route in Iceland, known for its stunning natural landscapes and historical sites. It is in the southwestern part of the country and is easily accessible from the capital city, Reykjavik. The Golden Circle covers a relatively short distance but offers a diverse range of attractions, making it one of Iceland's most visited areas. Here are the primary attractions along the Golden Circle route:

Gullfoss Waterfall: Often referred to as the "Golden Falls," Gullfoss is one of Iceland's most iconic waterfalls. It consists of two cascades, with a total drop of about 32 meters. On sunny days, the mist from the falls often creates rainbows, adding to the spectacle. We learned about the waterfall and a little bit about the conservation of nature with the example of the activist Sigriður Tómasdóttir.

Gullfoss, also known as the "Golden Falls," is one of Iceland's most famous waterfalls, located along the Golden Circle tourist route. Its beauty and natural significance make it a cherished national



Figure 13. At Gullfoss

landmark. In the early 20th century, plans were made to harness the power of the Hvítá River, which feeds Gullfoss, for hydroelectricity. A foreign investor obtained a concession to build a hydroelectric plant at Gullfoss. This would have dramatically altered the waterfall and the surrounding environment.

Sigríður Tómasdóttir, who lived on a nearby farm, opposed these plans vehemently. She fought tirelessly to protect Gullfoss, even resorting to legal action. Sigríður's efforts included walking barefoot to Reykjavik to bring attention to the cause and engaging in legal battles to prevent the construction.

Her determination and passion for preserving Gullfoss as a natural wonder and national treasure captured the hearts of the

Icelandic people. Her efforts, along with the support of other conservationists and the public, eventually led to the cancellation of the hydroelectric plant project. Gullfoss was saved from industrialization and remains in its pristine natural state to this day. **Geysir Geothermal Area**: This area is named after the Great Geysir, which is the namesake of all geysers. Although the Great Geysir is mostly dormant, its neighbor, Strokkur, is highly active and erupts every 5-10 minutes, shooting hot water up to 30 meters into the air. The Geysir area also has numerous hot springs and bubbling mud pots.

Pingvellir National Park: This UNESCO World Heritage Site holds great historical and geological significance. It's the site of Iceland's first parliament, Alþingi, established in 930 AD, making it one of



Figure 14. Waiting for Strokkur to erupt.

the world's oldest parliamentary meeting places. Þingvellir is also known for its dramatic landscape formed by the North American and Eurasian tectonic plates pulling apart. The Almannagjá gorge and Silfra Fissure are notable features.

We were so lucky to have one of the rangers, Torfi Stefán Jónsson, to receive us and explain several interesting aspects about the geology, history, and biology of Þingvellir natural park.

Finally, we drove to Reykjavík, to the hostel Dalur, where the group would stay for the next four days. And, surprise surprise, a geothermal swimming pool is next to the hostel, where we could end the day like typical

Icelanders would do.

Theme of this days workshop: Differences in air quality in Poland and Iceland. Environmental and human-related factors. Ways to reduce threats

On Thursday 14th there was a reception in the festive hall in Menntaskólinn í Reykjavík early in the morning. The vice principal, Einar Hreinsson, welcomed the group. After that, there was serious business. First there was an introduction to scientific methods and after that the participants worked in groups to design their experiments, program the microcomputers, and prepare a presentation on their research plan. Theme: Construction of measurement sets and experiment design.

On Friday 15th the work on research design continued. Also, there were some experiments made with the behavior of dust, data collection and output. Finally, the groups presented their research plan in the festive hall. Theme of today's workshop: Themes: Party puff, what hangs will not sink.

Saturday 16th was mostly a free day in Reykjavík. Some of the students used the opportunity to hang out together after the workshop and have a good time. Theme of the day: Planning group work during the project.