360 degree virtual field work from the center of Trondheim

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Text: Jakob B. Cyvin

The project DigiGeo– "Transferring contact, technology- and field-based education to digital: methods and tools for geosciences training" provides students with experience in using new digital methods for learning and fieldwork. This time, students from Germany, the Netherlands, Finland, and the Czech Republic were able to participate in a virtual reality (VR) field course in Trondheim city center.

At the Department of Geography at NTNU, students studying education, teaching, or geography can take the course GEOG2500 and through this participate in the Erasmus+ project DigiGeo. Jakob Bonnevie Cyvin is a PhD candidate at the Department of Geography, and on March 17th 2023, and he operated a small mobile workstation from the streets of Trondheim. Using a backpack with a car battery, a 4G router, a laptop, an improvised work table on his stomach, various cables, and a 360-degree camera, he streamed a fieldwork on geology in buildings in full HD quality to students in Central Europe.

Digital as well as physical cooperation
Jakob explains that this was one of several preparatory lectures that students could follow this winter/spring before meeting physically in Olomouc, Czech Republic, during the last week of April. From NTNU six students participated in these digital lectures or fieldwork from other universities in Europe, before the week in Olomouc. The summer school field week in Olomouc was then used to evaluate the preparation, create own field course material, and learn from each other on how to create digital fieldwork themselves in geosciences in the future.

Jakob B. Cyvin (left) and Jardar Cyvin (right) using a mobile office solution, streaming live from Trondheim city center, where there are 400 million-year-old

fossils in calcium-stone the wall in the background. *Photo: Marcela Tesarova.*

During the fieldwork VR field work on geology in building in Trondheim city, the students were able to watch the VR-film on YouTube, where they could look around (with their mobile phone) or pan the image in all directions (on their PC). Jardar Cyvin works as a professor at the teacher education program at Kalvskinnet and frequently takes teacher education students out on this excursion live, but with students who are part of the DigiGeo project from other countries, they could now participate in the field trip digitally.

Participants from Bochum, Germany

Anna Bartels followed the virtual field course on geology in buildings from Germany and stated, "it was exciting seeing different parts of Trondheim live and learning something about the history the stones can tell. It is much better than photos or offline information". She further concluded, "Specially the 360 camera is very helpful so that you can view the different areas at your own pace."

Marcela is on an internship in the VR-Learn project led by Jakob, where they work on using low-cost VR for field-based learning. She hopes the technology can be used more extensively when someone goes ahead and tests the possibilities and limitations.
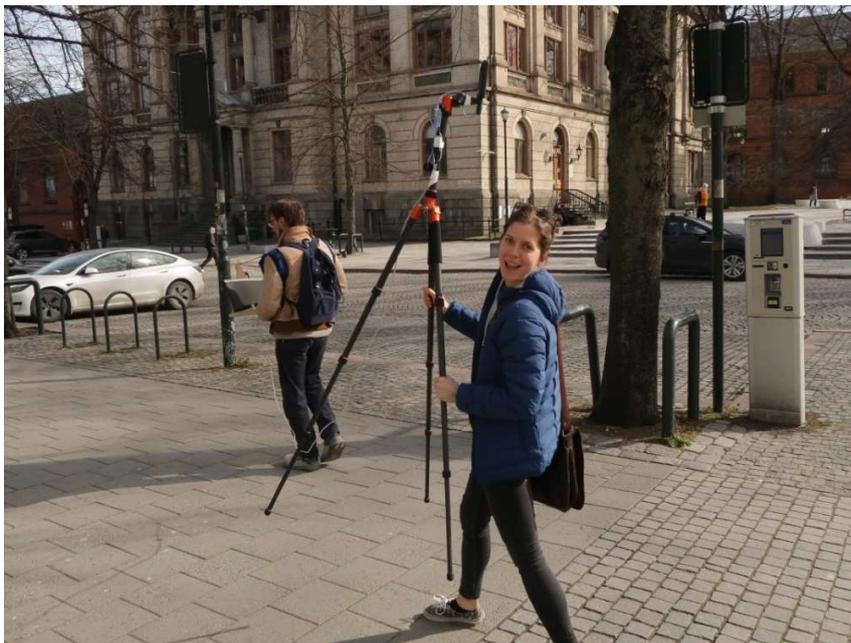
360-degree live fieldwork with Jakob B. Cyvin (left) and Marcela Tesarov (right) with camera. *Photo: Jardar Cyvin.*

All three of them state that setting up a system that enables such digital fieldwork is time-consuming, but they see great potential in the technology when travel is not possible, for example to take students to places that are too far away to visit, to dangerous locations, or for pre- or post-field course work. Over the next year, they hope to allow more students to

experience such virtual fieldwork using VR goggles, so that the feeling of being present where the camera is located increases.

This text is partly translated and improved by ChatGpt and Google translate.

More information about DigiGeo:
https://storymaps.arcgis.com/stories/017d7a2d26d846bba7ca3dc3a3572e04