



DigiEduHack Solution Miskolc - Solutions for a virtual geological exploration field trip or short internship

**Challenge: Miskolc - Solutions for a
virtual geological exploration field trip
or short internship Challenge 2020**

Virtual geological field trip using modern digital technologies, with Elba as a case study

A short yet content-rich digital field trip for 2nd years

This framework is intended to enable field trip leaders to take maximum advantage of modern technology to design virtual field trips to be nearly as engaging as actually being in the field, while being cheaper, safer, and easier to organise, particularly in difficult times like the present

Team: University of Oxford

Team members

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Contact details

We are easiest to contact on LinkedIn

Solution Details

Solution description

Our solution describes a 3-day field trip designed to be given online, or easily adapted to a classroom context, helping students gain a better understanding of the local geology

This course was designed with the next generation of geologists in mind. Our objective was simple: We wanted to give students the fullest geological experience possible whilst elevating their understanding and appreciation of the importance of data in our science.

We designed this course to last for 3 days, with each day consisting of 5-6 hours of work. The course will cover the local lithologies, structure, and economic geology. In addition, to give the student the broadest view of the area possible, we will be considering all aspects of the course at a range of scales (thin section to regional).

To capitalise on the virtual nature of the course, we will be making use of existing software packages, which we hope will give the student the following:

- A deeper understanding of the inherently 3D nature of geology.
- Hands-on experience with manipulating data.
- Insight into how to approach geology in a quantitative way, and the importance of these methods moving into the future, particularly in economic geology.

The course includes independent assignments for students to complete, giving the field trip leaders an means of measuring the effectiveness of the digital teaching and therefore the success of the trip.

Such a framework is beneficial not only to challenge organisers, the University of Miskolc, for their later use, but also to the wider geological community in making virtual field trips more engaging, helping students experience field geology in hard to reach locations and during times of decreased mobility.

Solution context

The modern day presents many opportunities for the improvement of geological field teaching through the application of digital solutions for visualising geological data in a more intuitive way than was common before.

It is in itself desirable to take full advantage of these new opportunities to help improve the standard of geological teaching the world over. This is especially helpful to institutions with limited resources, allowing them to reach locations that otherwise wouldn't be available to them.

The immediate context of the the issue in the present day is of course, obviously the disruption to international travel and the physical gathering of people caused by the Covid-19 pandemic, which has forced institutions globally to suspend their usual field trips and move their field teaching to a digital format, making it more urgent than ever to implement these solutions.

Solution target group

Our solution targets universities and similar institutions to use it for the teaching of students approximately on the level of second year undergraduates.

It provides them with an alternative to their usual field trips, normally restricted in term of distances travelled to reach the field sites, cost and time.

It allows students to get to a wider array of field locations more cheaply, safely, and in less time.

Solution impact

The primary impact of our solution is the improvement of students' understanding of field geology, digital solutions for the visualisation of geological formations, and their confidence with using these.

A further impact is extending the learning opportunities of field trips to a greater number of students by allowing geology departments around the world to access field areas anywhere in the world, and for departments to share complete field trips under the aegis of academic collaboration.

We measure this impact by the number of students who might be able to participate, and the level of understanding they demonstrate in the included assessments.

Solution tweet text

Join us for a truly new take on field geology on the Isle of Elba, using all the coolest modern technology, from the comfort of your office chair! Now packed with buzzwords like 3D modelling, drones, and even LiDAR!

Solution innovativeness

No field trip we are aware of has previously taken such strong advantage of all the ways to visualise geological data presented by modern technology, as there was previously never as burning a need for digital field trips before.

We strongly believe that our planned field trips has covered the maximum breadth of novel technological solutions available in the modern day.

Solution transferability

Although our planned field trip was set on the Isle of Elba, it was designed to be readily adaptable for any other locality, by simply changing out the datasets for ones fitting the desired field area.

Solution sustainability

A further advantage of digital field trips is that they can be easily recorded, replayed an unlimited number of times, and readily published for the public's benefit, making them inherently sustainable.

Our format also minimises the environmental and social impact on the local area, as it dramatically decreases the number of people who need to be physically moved to the field area. This minimises the amount of transport necessary, and with it the associated pollution. It also means orders of magnitude fewer boots on the ground at outcrops, reducing the wear and tear to these outcrops from trampling of vegetation, hammering, and potential litter, thereby helping preserve them for future generations.

Solution team work

We started out during the first day of the hackathon by having a very productive brainstorm to lay out our plans for this solution.

We then divided the work by days of the field trip and by different tasks involved in the submission of the project. This division of labour worked excellently, allowing each team member to work on his task at his own pace and according to his own judgment, along the ideas we agreed on at the start.

We have worked together on collaborative projects before and would all be happy to work together again in the future.