



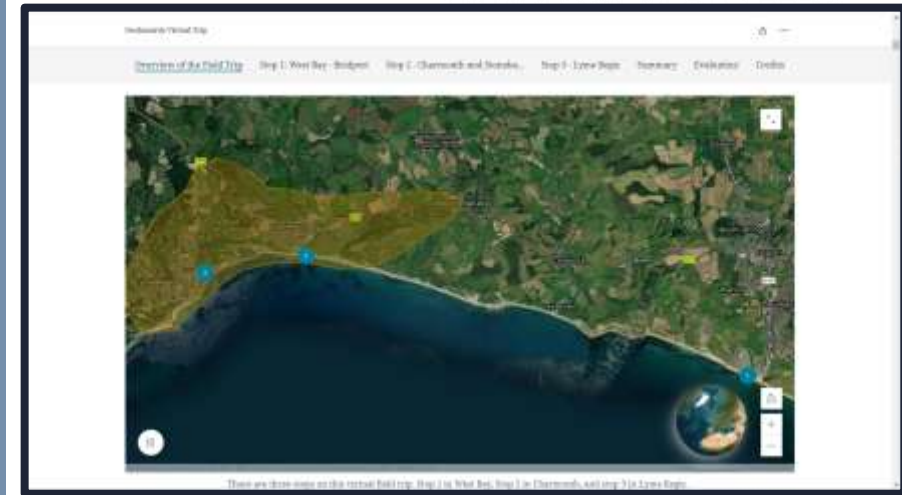
Reimagining Geohazard Fieldtrips: A Hybrid Approach with VR in Environmental Science Education

Contributors:

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Why develop virtual field trips?

- Fieldwork experience is highly valued, but challenging at times
- Enhance in-person field trips and improve inclusivity
- Additional engaging learning activities (not just lectures/practical's)
- Blended delivery maintains support and collaborative working
- Opportunity to incorporate new technologies
- Provides a persistent, inclusive resource



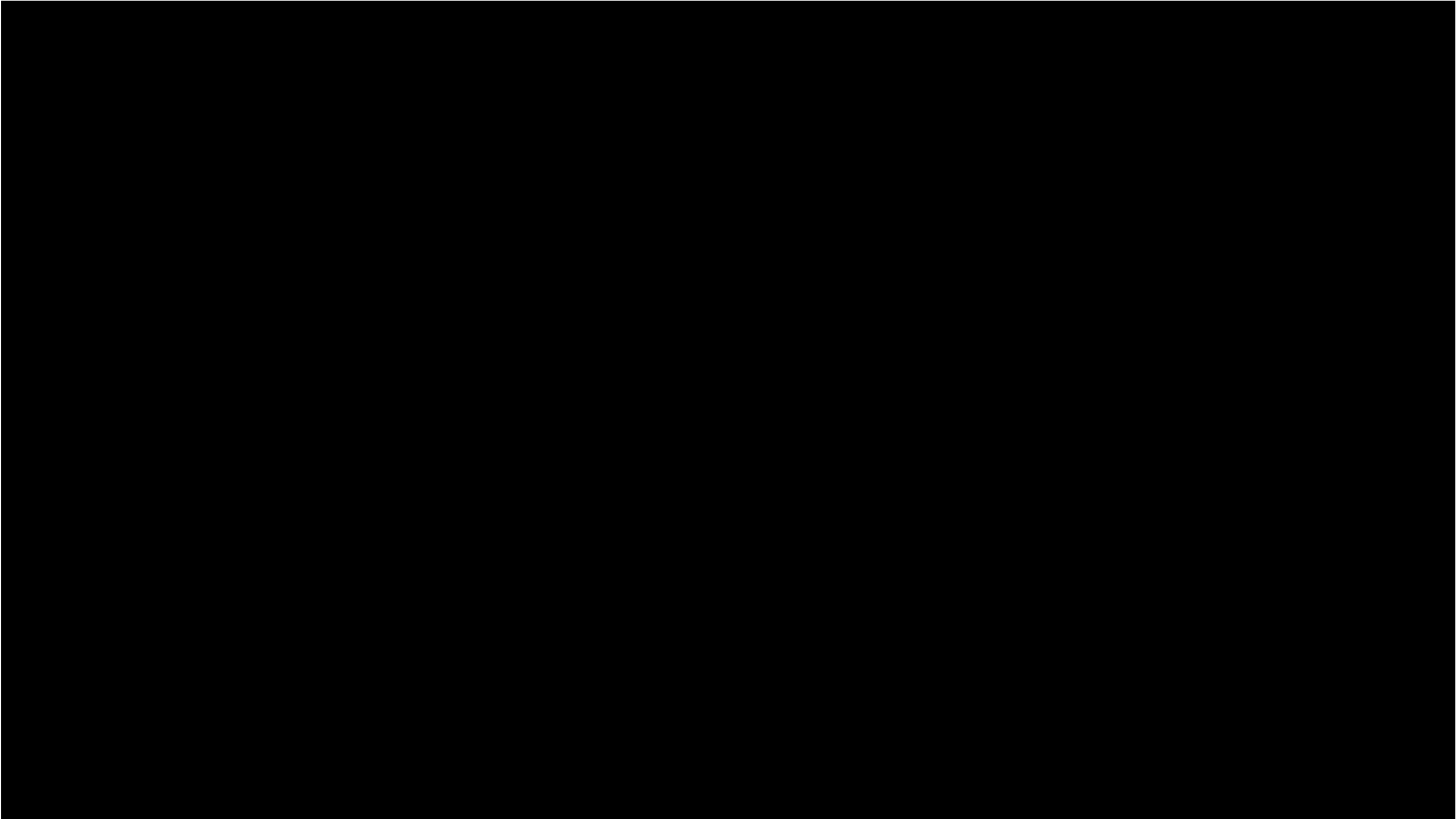
The Field Trips



The Jurassic Coast

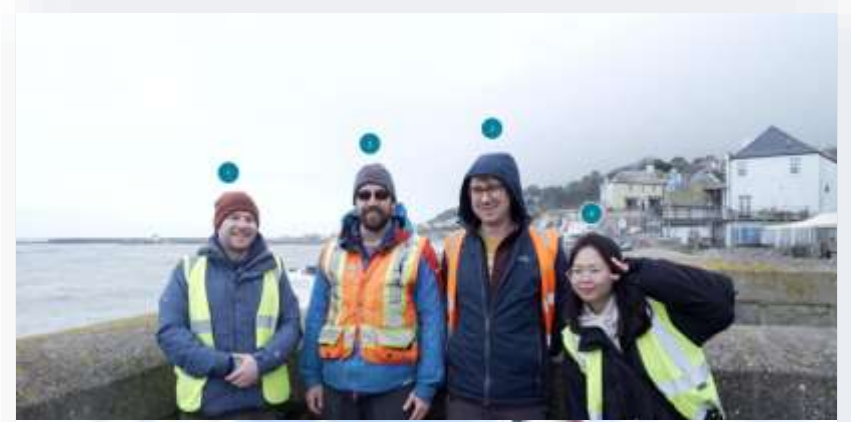



Ilkley Moor



Data collection and content overview

- ❑ Six 360 videos
- ❑ Twelve drone flights
- ❑ Twelve “2D” videos (including an intro video)
- ❑ Four strength test locations
- ❑ Six compass measurement locations
- ❑ Info ‘pop ups’
- ❑ Interactive map
- ❑ Over 130 360 scenes





**Jurassic Coast
Geohazard
Fieldtrip
Walkthrough**

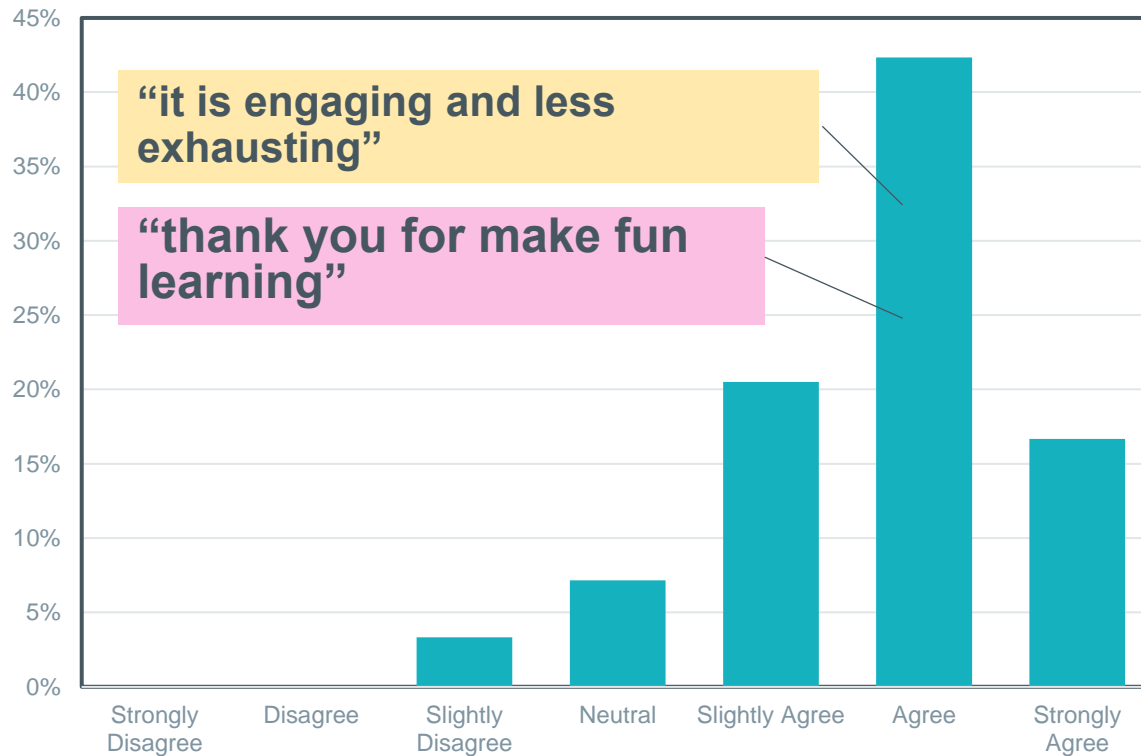
Synchronous Teaching

- Worked collaboratively
- Tutor-led discussions after each field site
- Remote participation
- Flipped classroom
- VR session and web XR alternative

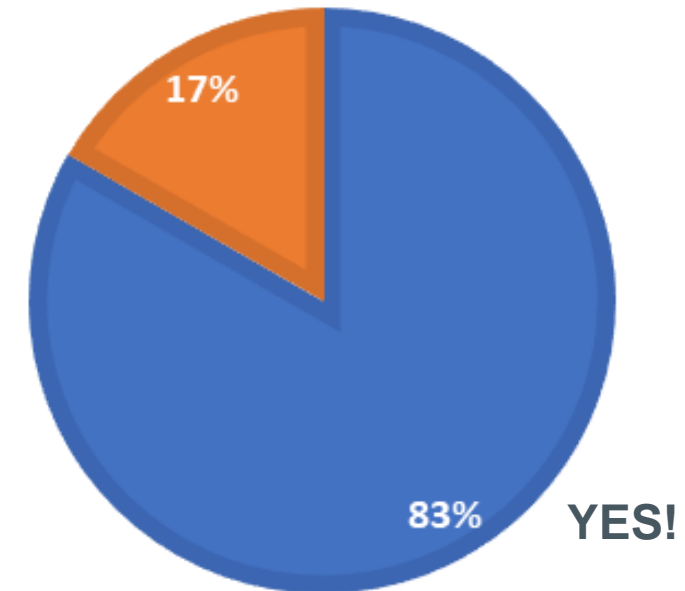


Student Engagement

The virtual field experience was engaging



We asked: Would you like more virtual blended learning experiences on the MSc?



Total 30 responses

Student Experience

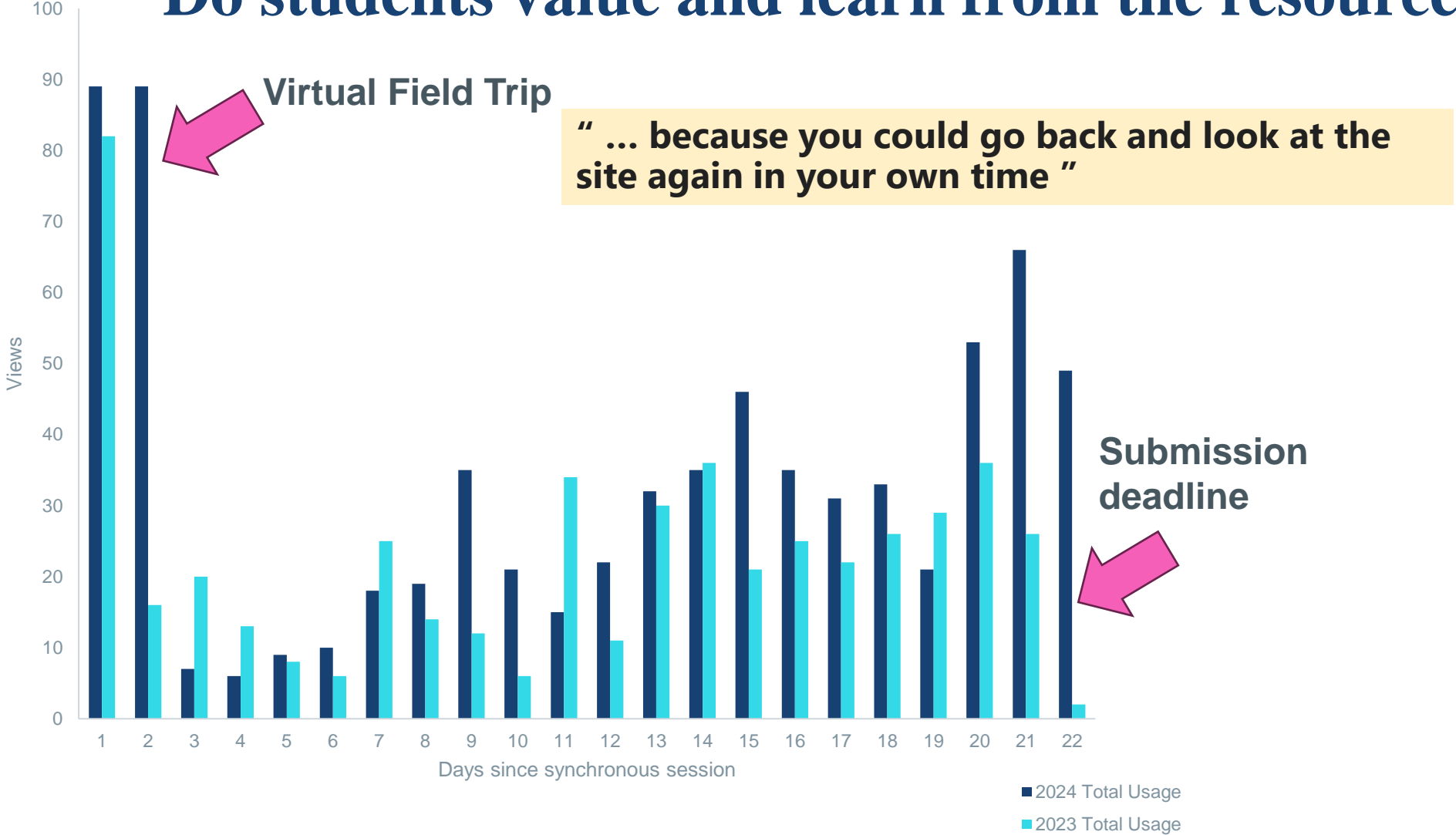
We asked: What was your favourite element of the virtual trip?



We asked: Use one word to describe your experience on this virtual field trip?



Do students value and learn from the resource?



On Assessment:

No statistically significant difference in student marks between in-person and virtual.

Submission deadline 21 days after In-class delivery

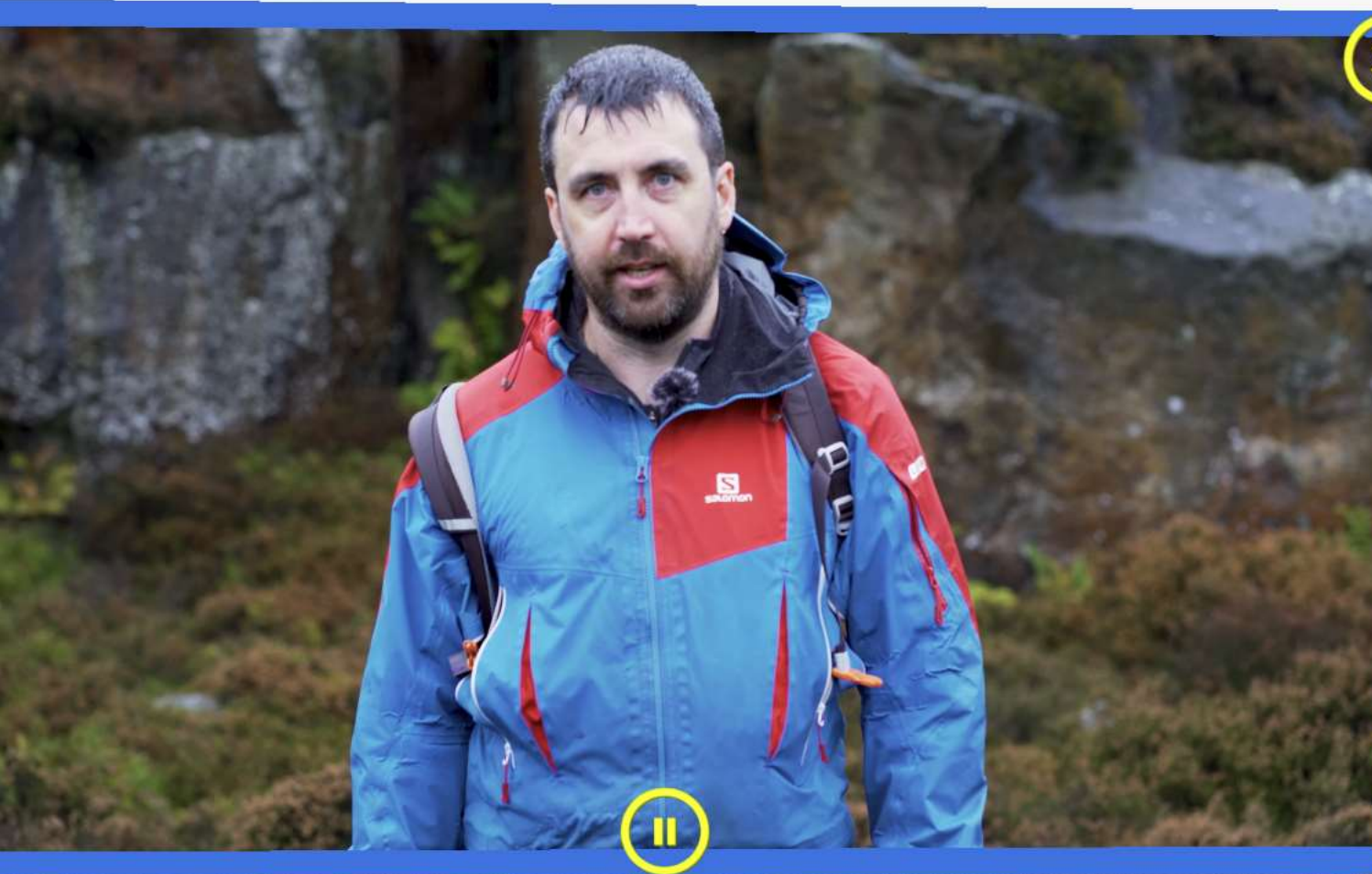
Student Understanding

Did the virtual fieldtrip enhance your understanding of the topic ?

- Yes. Looking at LiDAR data of landslides over an extended period of different years was an extremely valuable learning tool.
- Yes, understanding how the data is gathered to start thinking about the hazards and the consequences.
- It enhanced the understanding of the topic, sitting in comfort of the room got to learn a lot about the geology, geomorphology and hazards related to it in a same way as in person trip but a good part was seeing a landslide or any geological features from various angles where a person can't get to.



“Great interactive learning tool, feeling immersed in the headset VR scene is important for my learning.”



What did we learn?

- Students valued the resource
- More drones
- Improved map
- More interactivity
- Plan Plan Plan!
- Drone flying needs a lot of permissions



3-4 360 here, ones where a view looking up at

Note 3

Intro Note 1

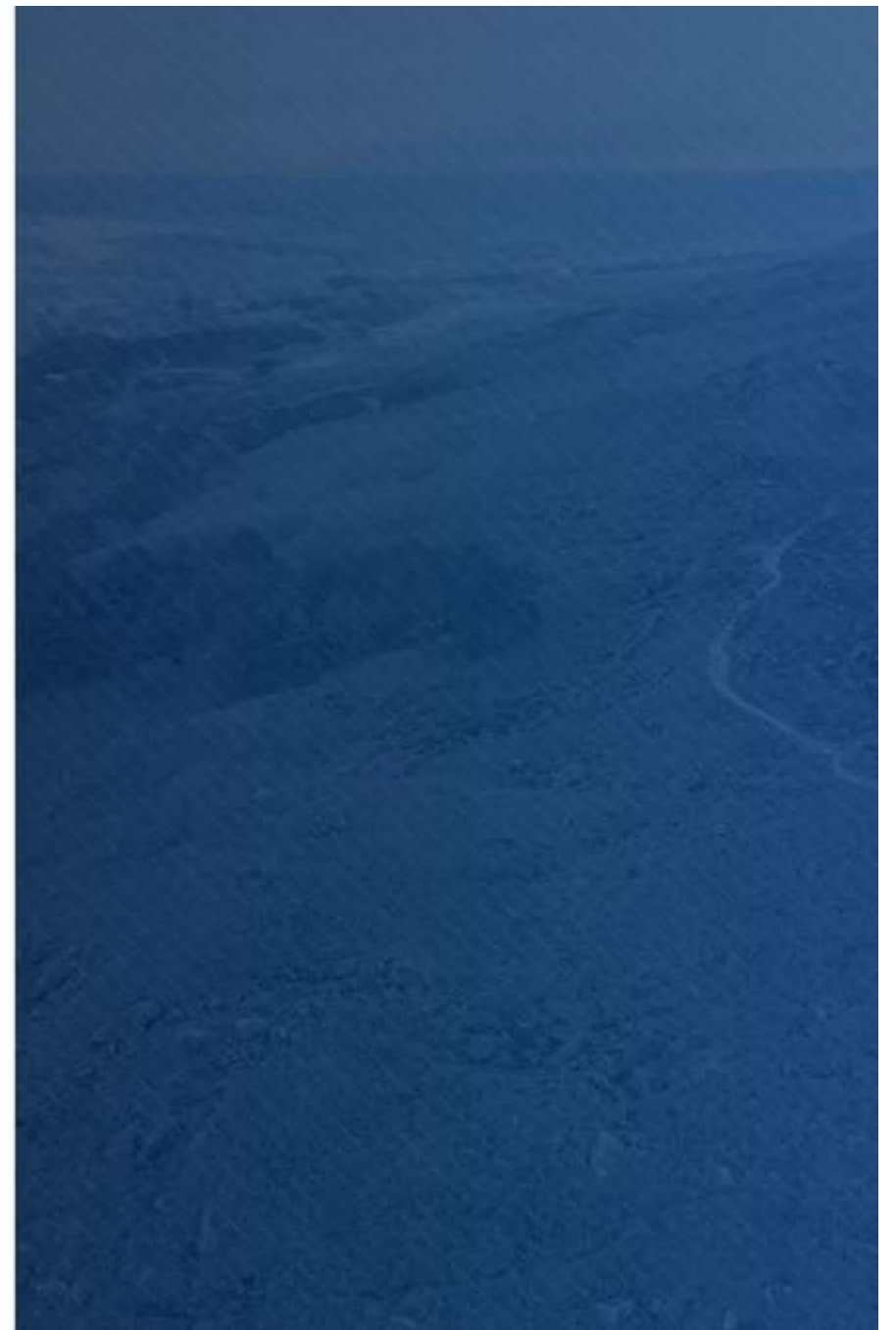
Strength test on mudstone

Note 2

Note 4

Split drone footage into smaller flight lines (numbered)

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Geohazard
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In Summary

- Engaging and beneficial mode of delivery
- Provides a perpetual, re-usable learning resource, reinforcing learning
- Supports understanding of the topic
- Provides a safe, effective, realistic and inclusive alternative or enhancement to in-person fieldtrips
- Has inspired the Faculty to develop and deliver more

"Staff involved in the organisation and delivery of fieldtrips recognise the value that this type of digital resource can bring to the learning experience, whether that be as a preparatory exercise, post-trip debrief material, or a physical trip replacement under certain circumstances.

As a faculty we are keen to explore how we might grow the provision of virtual fieldtrips and field resources to enhance the experiences we can offer to students".

**Mark Thomas, Faculty Digital
Education Academic Lead**

Thank you for listening

And any questions?

Student Feedback

Did the virtual fieldtrip enhance your understanding of the topic

Yes. Looking at LiDAR data of landslides over an extended period of different years was an extremely valuable learning tool.

Yes, understanding how the data is gathered to start thinking about the hazards and the consequences.

Yes because It added another dimension of LiDAR surveys with pictures which helped with understanding processes of failure.

Yes, useful to be by a computer to quickly search for additional resources and get a view across regional area

It enhanced the understanding of the topic, sitting in comfort of the room got to learn a lot about the geology, geomorphology and hazards related to it in a same way as in person trip but a good part was seeing a landslide or any geological features from various angles where a person can't get to.

Other comments

Really good and interacting session.

Thank you for make fun learning