

“Knowing that there’s going to be uncertainty is a certainty in itself”

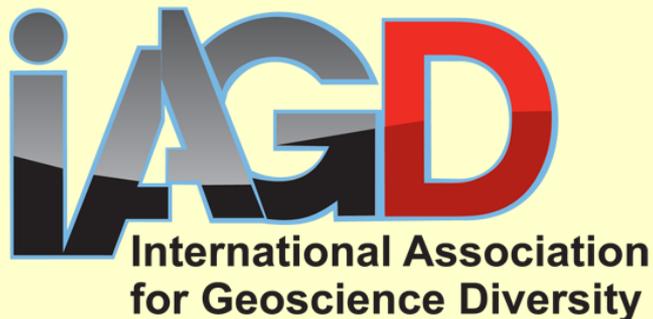


Working towards inclusive and accessible geoscience field education



Overview

- Why does fieldwork need to be accessible and inclusive?
- **Case study 1:** Sea-to-Sky Highway (2014)
- **Case study 2:** AccessAnglesey (2018)
- What have we learned?
- What still needs to change?
- Q&A

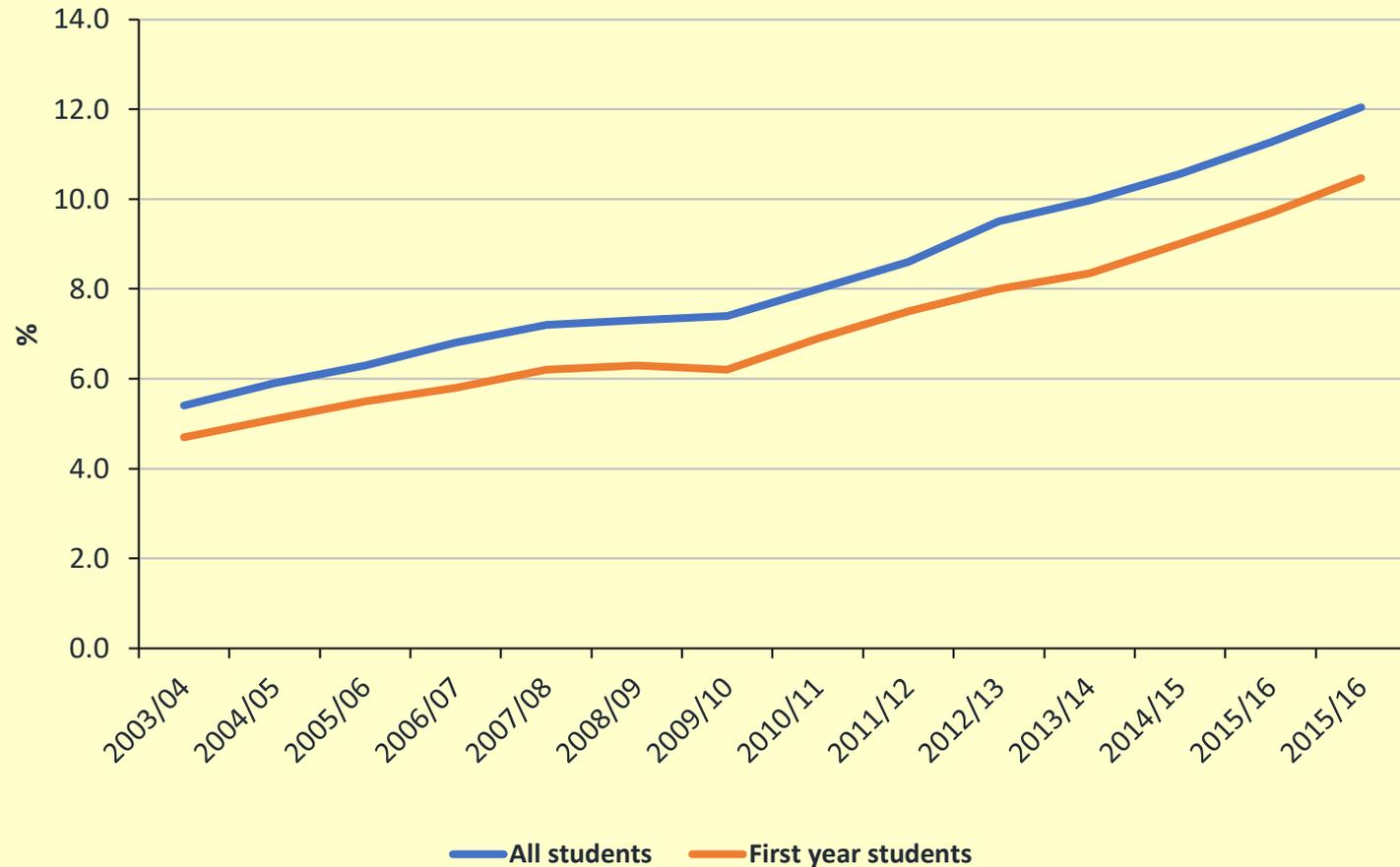


UNIVERSITY OF LEEDS



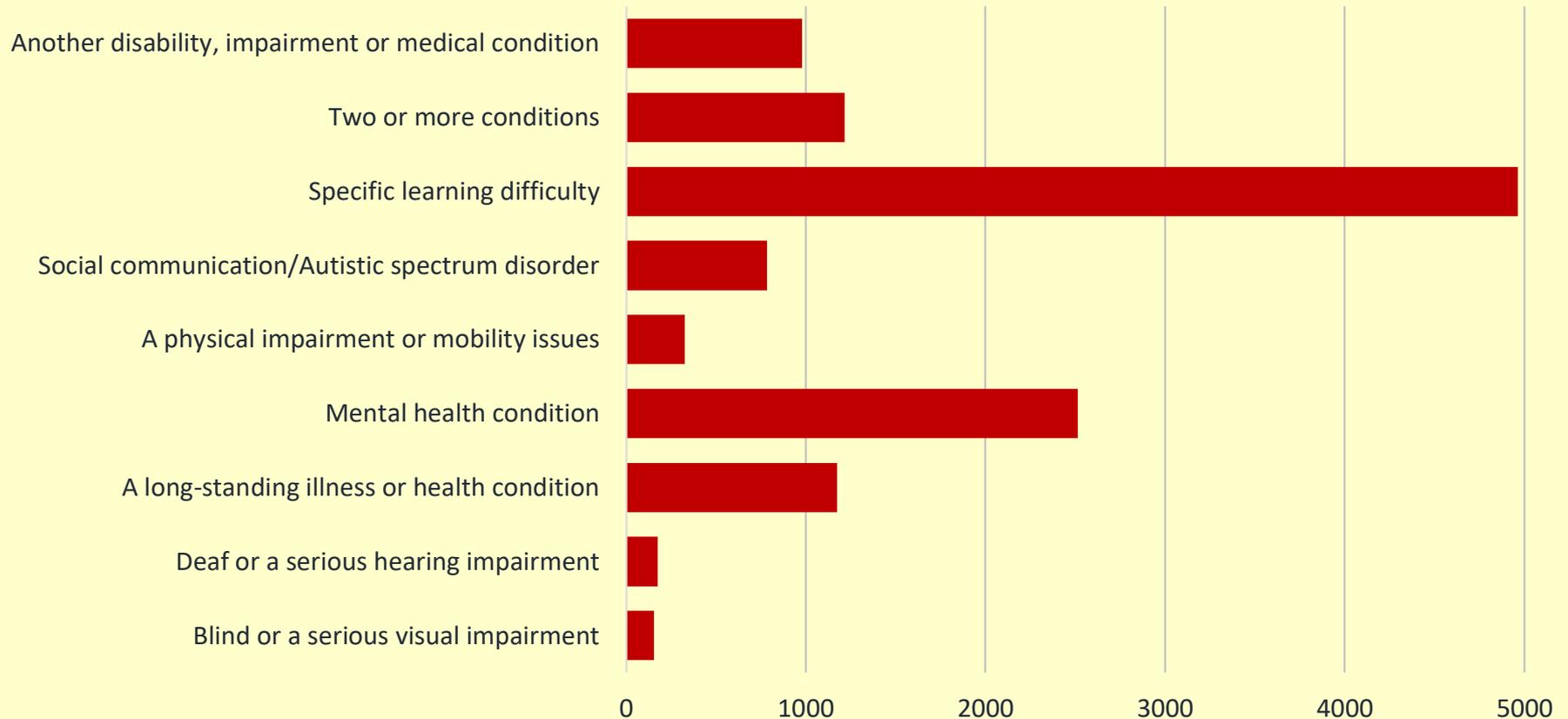
Why does fieldwork need to be inclusive and accessible?

Proportion of UK students declaring a disability 2003-2016 (Advance HE, 2018)



Why does fieldwork need to be inclusive and accessible?

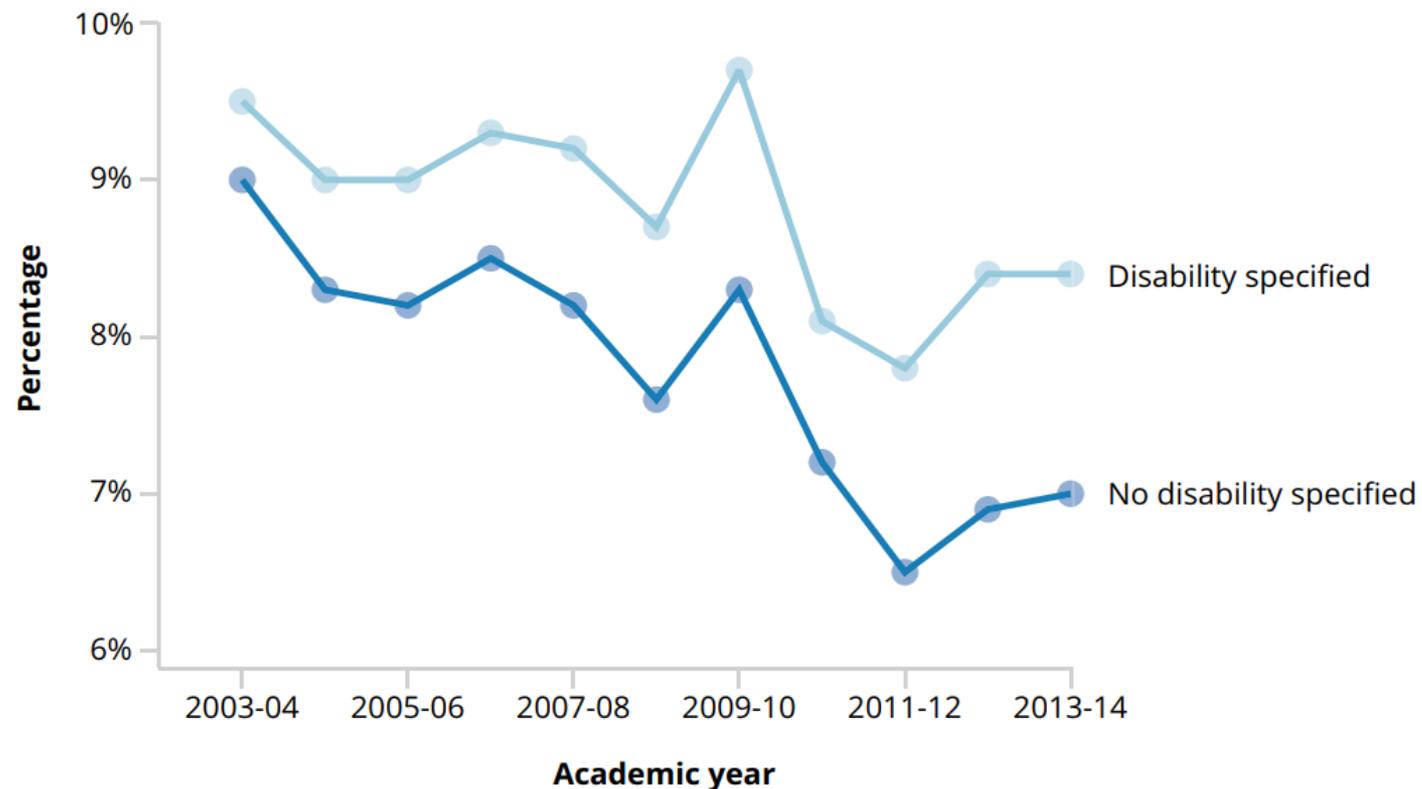
UK students enrolled on physical science programmes with specific conditions 2017-18 (Advance HE, 2018)



Why does fieldwork need to be inclusive and accessible?

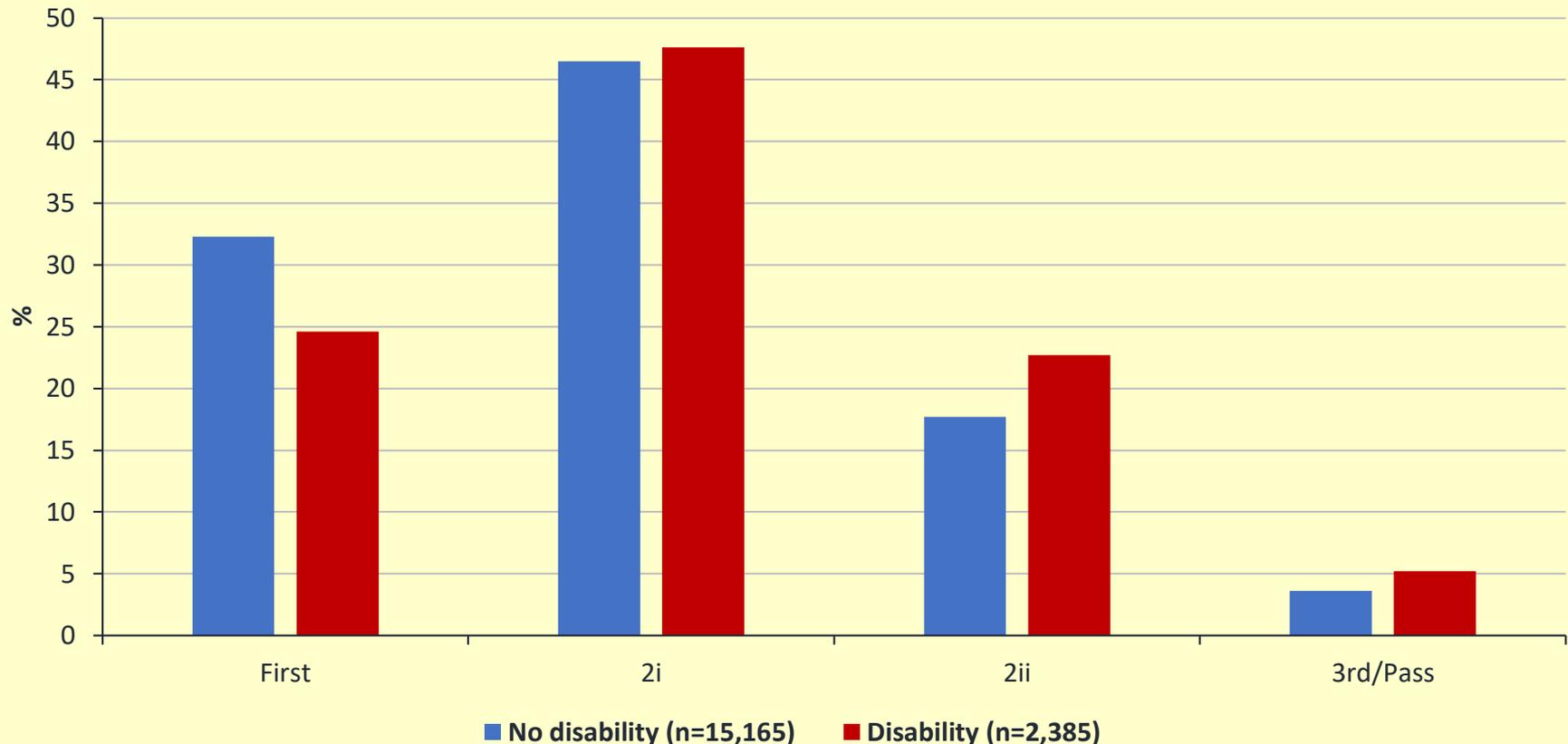
UK students progressing to the end of an undergraduate degree (HEFCE, 2016)

Figure 15 Non-continuation by disability



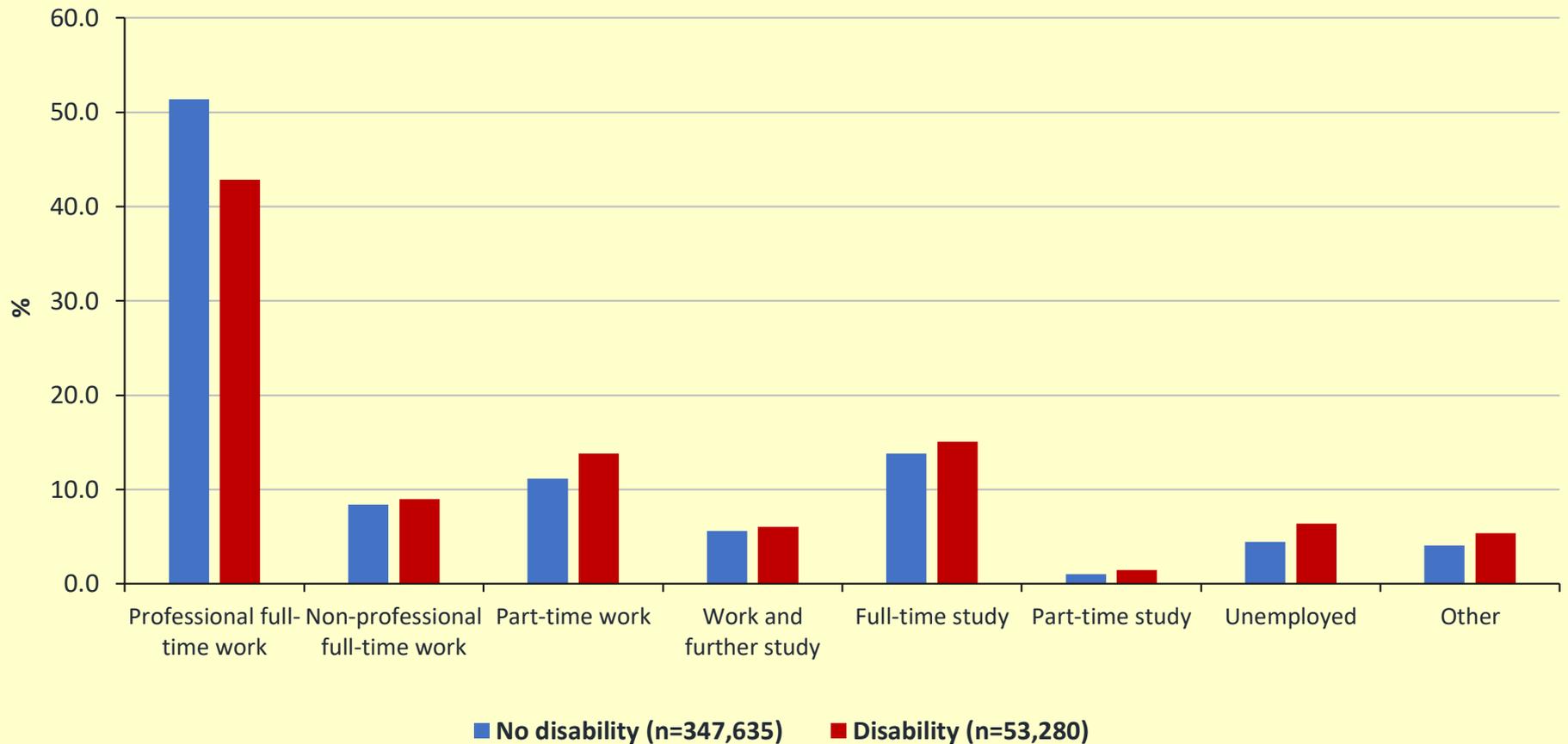
Why does fieldwork need to be inclusive and accessible?

Degree classification for UK students declaring and not declaring a disability 2016-17 (Advance HE, 2018)



Why does fieldwork need to be inclusive and accessible?

Employability data: UK students declaring and not declaring a disability 2016-17 (Advance HE, 2018)

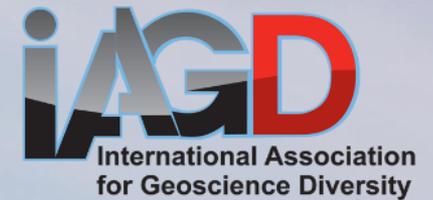


What are the main barriers to fieldwork?

- **Physical access and logistical barriers** (e.g. Cooke et al., 1997; Hall et al., 2004; Hall & Healey, 2004, 2005)
- **Social inclusion** (e.g. Fuller, 2006; Stokes and Boyle, 2009; Streule & Craig, 2016)



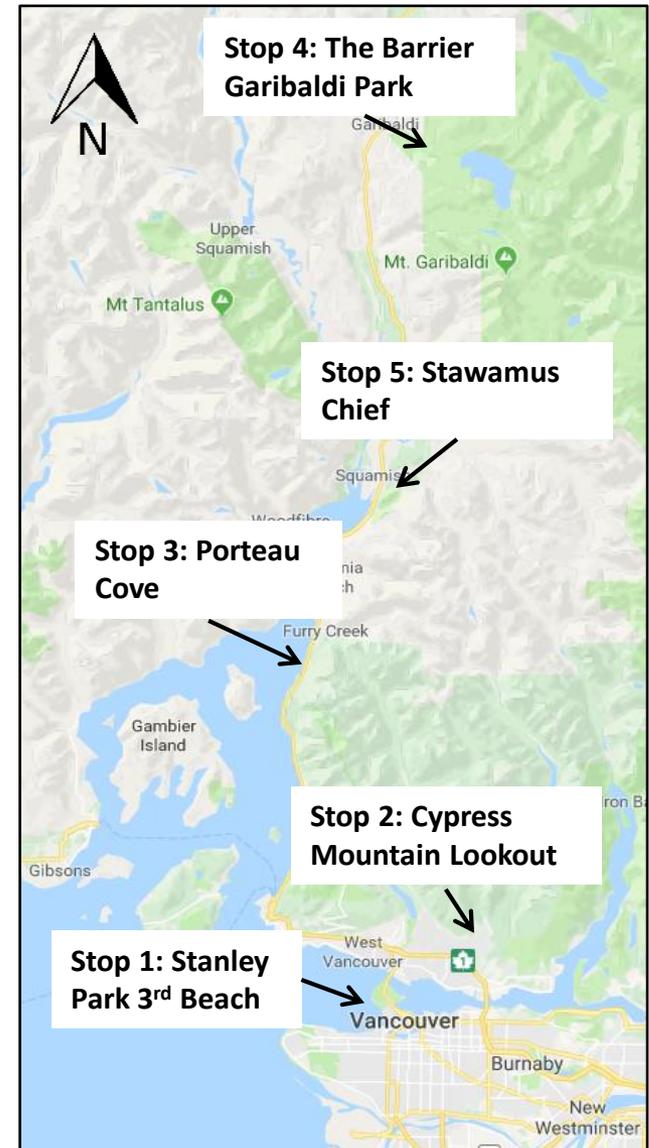
Case study 1: Sea-to-Sky Highway



AIM: To conduct a completely accessible fieldtrip where **students with disabilities and academic staff work together** to define inclusive methods of field instruction.

Fieldwork design

- Single-day field excursion (18th October 2014)
 - Workshop-style: students and faculty working collaboratively
 - Activities based around observation rather than data collection
- Range of geology and geologic settings encountered:
 - Coastal processes
 - Geohazards and engineering
 - Igneous processes
 - Glacial processes



Who took part?

- 15 students (UG and graduate)
- 14 geoscience faculty
- 2 instructors
- 2 participant-researchers
- 1 sign language interpreter
- 1 support team / photographer

17 participants (~60%) self-identified as having a physical, neurodiverse or mental health condition

Data collection

Focused on faculty (Feig *et al.*, 2019) and **student experiences** (Stokes *et al.*, in review):

- Pre and post-fieldwork focus groups
- In-situ observation of field activity



Prior experiences and expectations

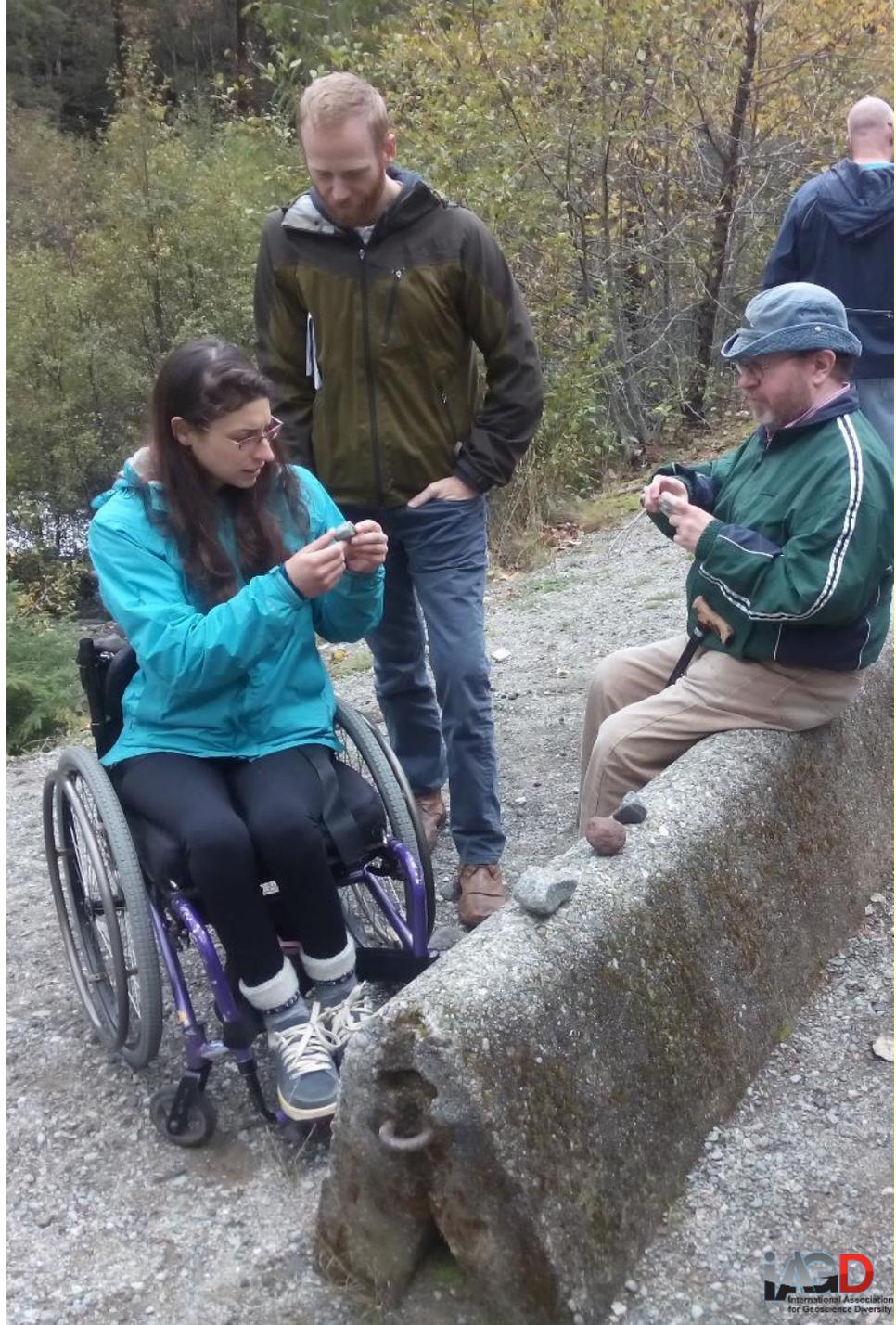
Prior experience

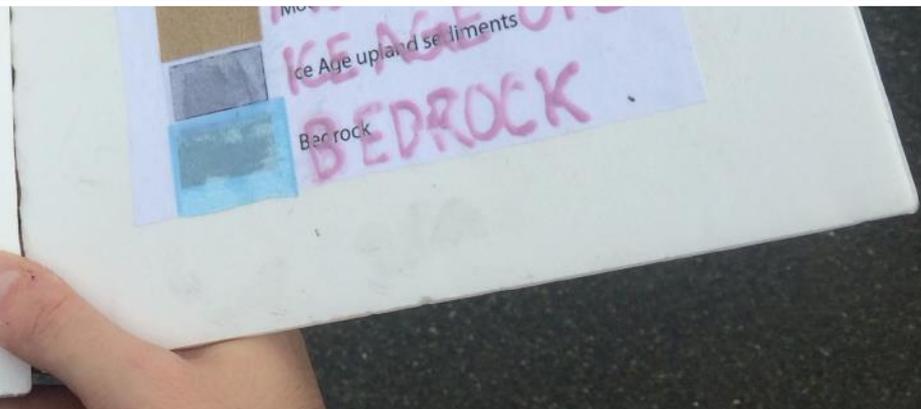
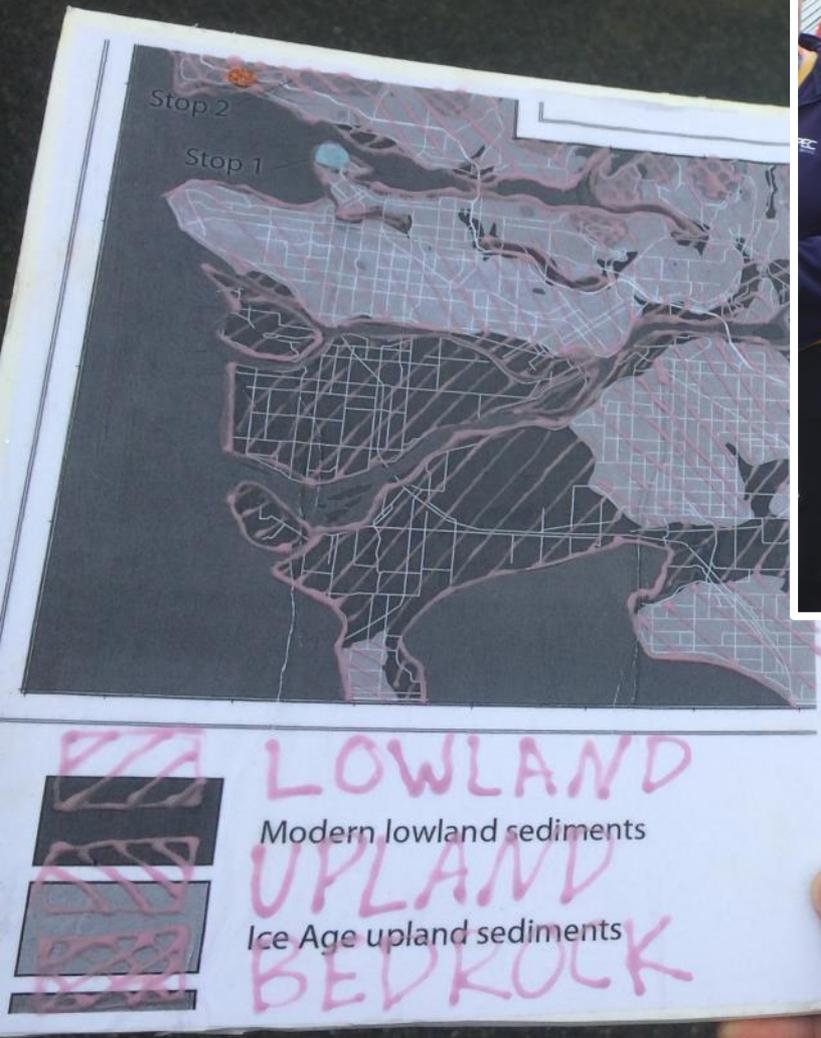
- Fieldwork is daunting
- Perceived by others as lazy and a burden
- Feeling misunderstood and unsupported
- “the last guy back to the bus”

Expectations

- Physical *and* attitudinal factors would be considered
- Multiple means of engagement
- Learning environment would be inclusive academically and socially







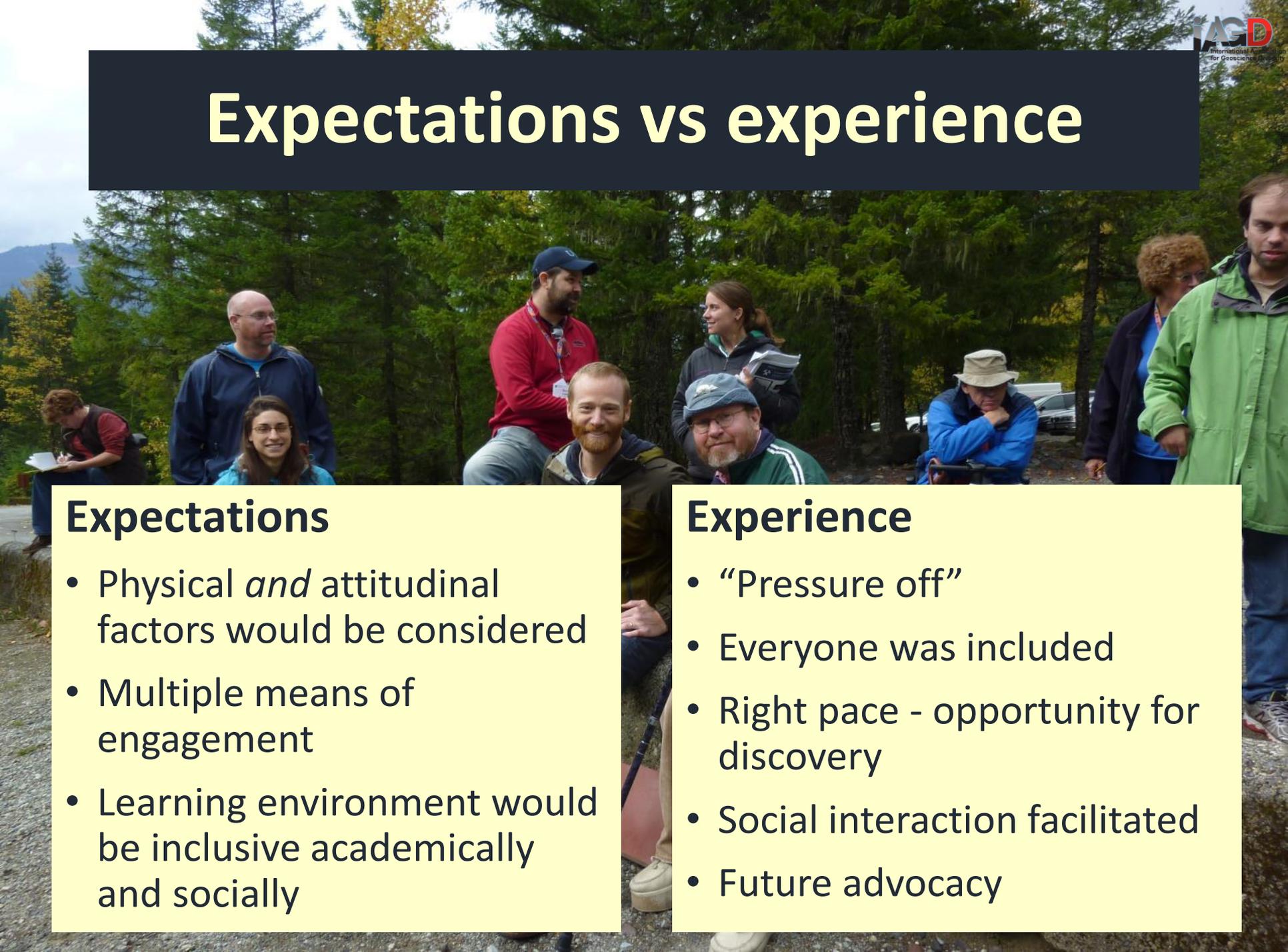
Expectations vs experience

Expectations

- Physical *and* attitudinal factors would be considered
- Multiple means of engagement
- Learning environment would be inclusive academically and socially

Experience

- “Pressure off”
- Everyone was included
- Right pace - opportunity for discovery
- Social interaction facilitated
- Future advocacy



Emerging characteristics of inclusive and accessible fieldwork

Characteristic	How can this be achieved?
Multiple means of access	Identify locations that offer multiple options for accessing the geology
Multisensory engagement	Make learning materials available in formats that are accessible to different senses, e.g. visual, audio etc.
Pace and timing	Ensure that the time available for the learning activity and pacing of delivery is sufficient
Collaborative learning activities	Encourage interaction between students and their peers, and with faculty, during all fieldwork tasks, including downtime
Academic as opposed to physical rigour	Design activities/choose locations to accommodate different levels of physical ability
Promoting self-advocacy	Invite students to make their needs known prior to and during field activity

Case study 2: AccessAnglesey

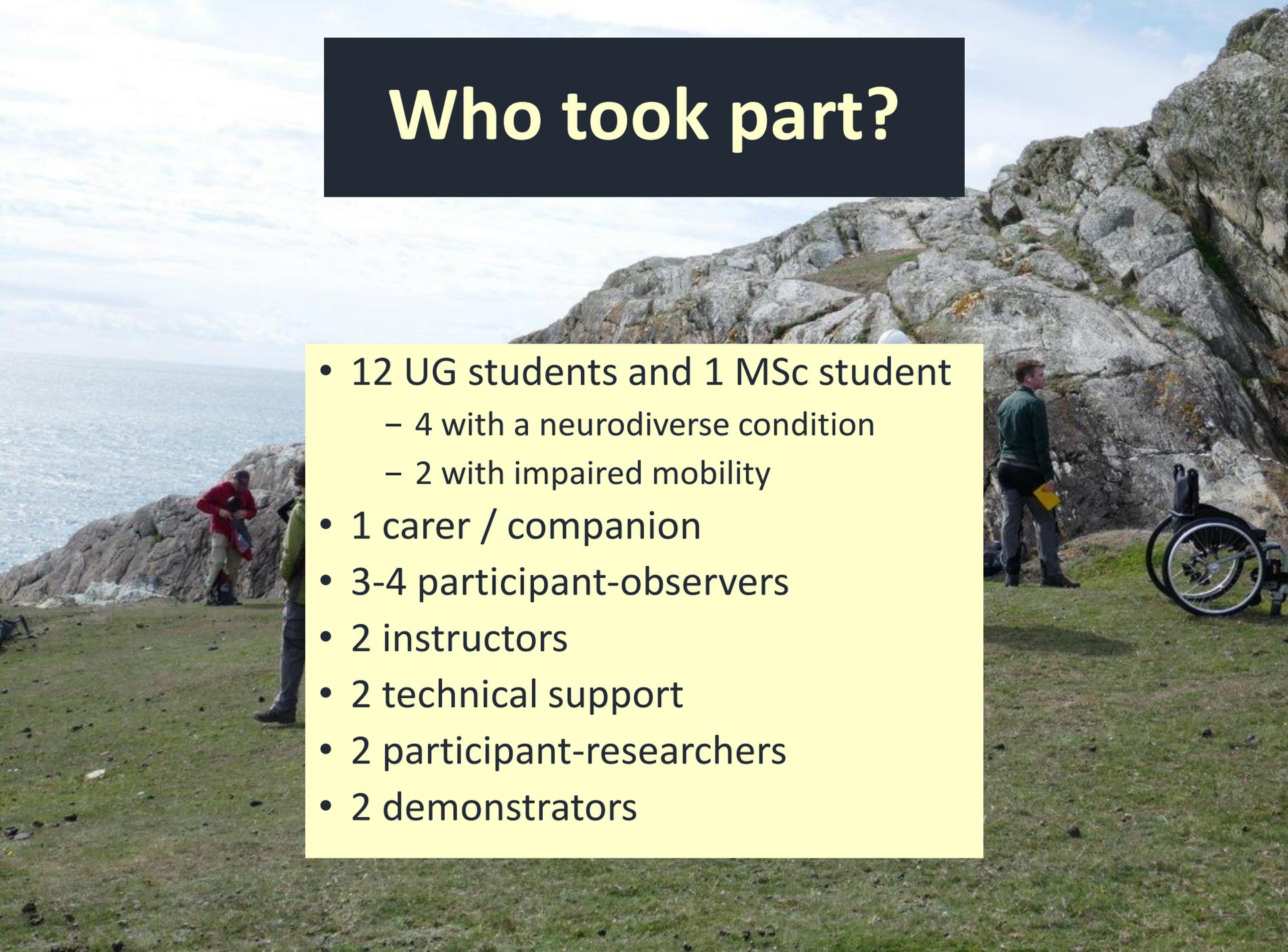


AIMS:

- Explore methods to assist inclusion and access in the field
- Develop and share good practice

Who took part?

- 12 UG students and 1 MSc student
 - 4 with a neurodiverse condition
 - 2 with impaired mobility
- 1 carer / companion
- 3-4 participant-observers
- 2 instructors
- 2 technical support
- 2 participant-researchers
- 2 demonstrators



Fieldwork design

Week-long residential field course (2nd – 9th Sept 2018)



Cemlyn Bay



Parys Mountain



Rhoscology



Llanddwyn Island



Lligwy Bay



Red Wharf Bay



LlanfairPG

Data collection

Focused on all participants:

- Pre and post-fieldwork surveys
- In-situ observation of field activity
- Post-fieldwork interviews



Logistics

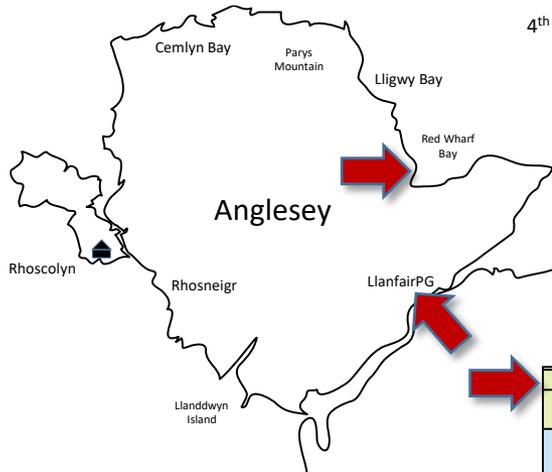
- Hostel accommodation
- Quiet room
- Mini-buses and 4x4 vehicle
- One or half days at each locality
- Evening work for context



Schedules and instructions

Day 2: Tuesday

4th September, 2018



Red Wharf Bay

Cliff and foreshore outcrops of Carboniferous limestone, sandstone and shales and a Miocene(?) aged beach deposit.

LlanfairPG

In the woods, beneath the Marquess of Anglesey's statue, are a series of Neoproterozoic blueschist outcrops.

9am: Depart (40 minute drive)

10.15am: At Red Wharf Bay

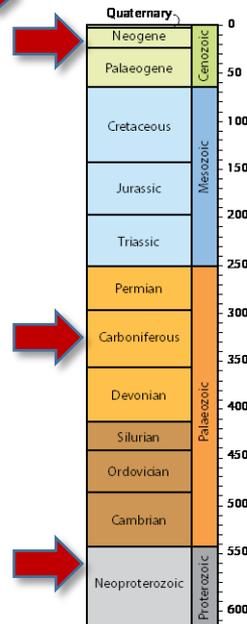
1pm: Lunch

2pm: Depart for LlanfairPG (15 minute drive)

2.30pm: At LlanfairPG

3.30pm: Leave for hostel

4.00pm: Back at hostel



- Separate A4 handout for each day in the field
 - Detailed plan of activities
 - Set of instructions for each location (that can actually be used in the field!)
- Leave 9am, return 4-5pm
- Scheduled lunch break
- Understanding that some timings might need to change

Field communications

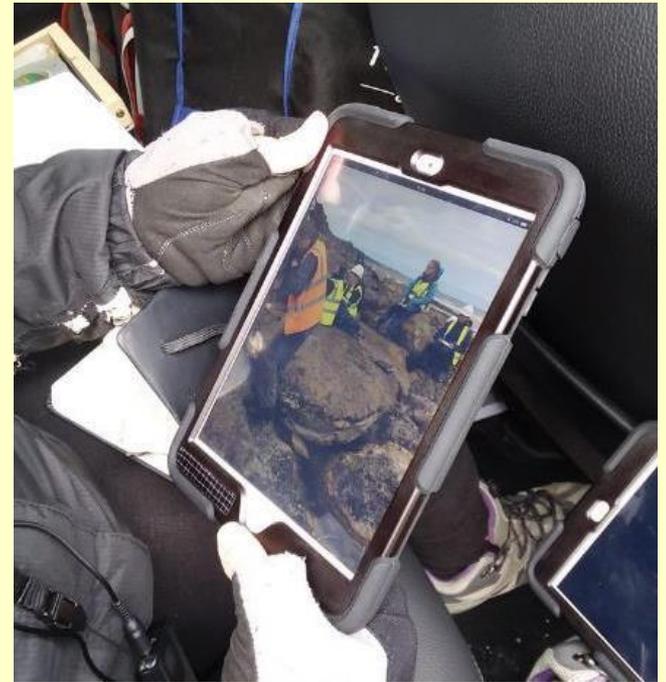


- Tour guide system
- Walkie talkies
- Live feed system
- Skype/FaceTime

Field communications



Live-feed system working off local area network

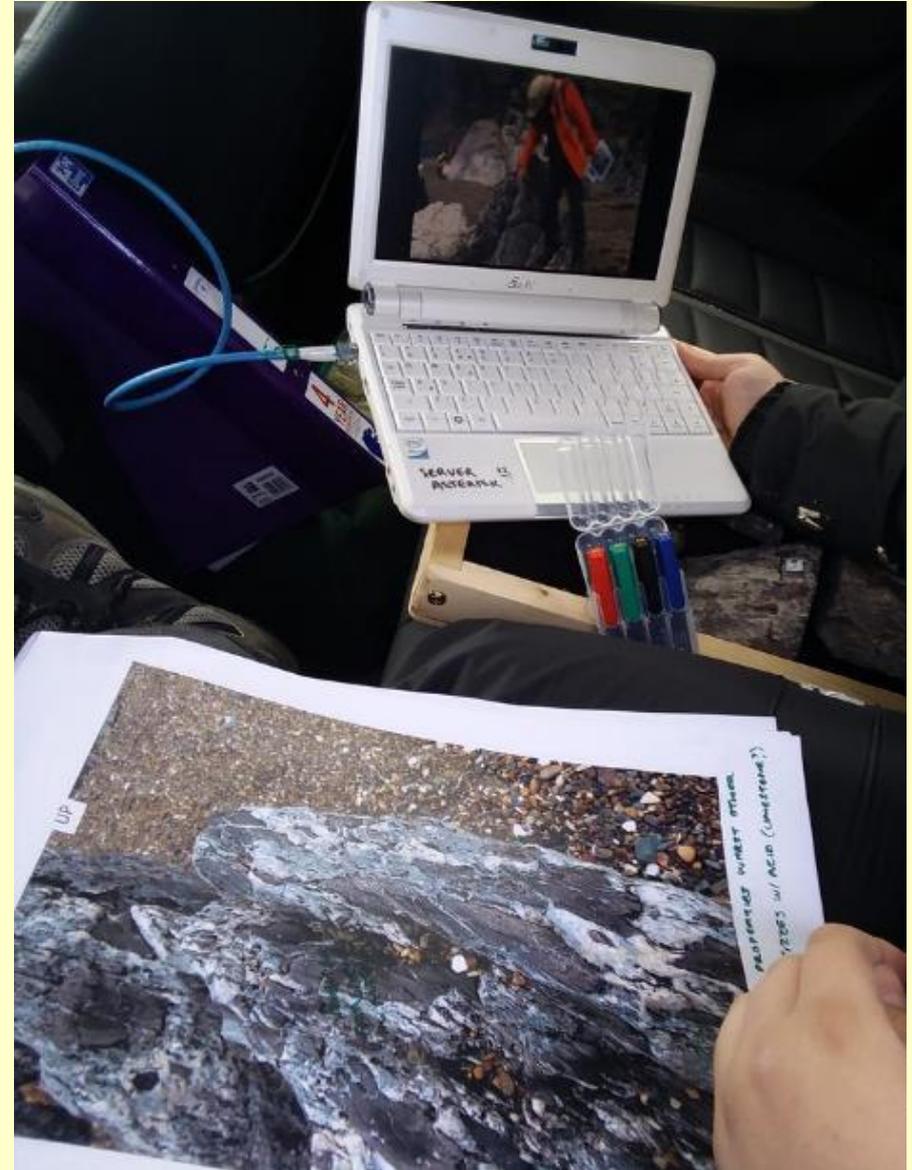


Field communications



“The tour guide system’s been really good...cos, now I don’t miss anything, because I can’t deal with being in a crowd or...getting too close, or having to sort of, back off and go somewhere to the side on my own. I can now do all those things, but I don’t miss anything” (Frank)

Alternative exercises in the field



Tablets vs notebooks



“...it took me a long time just writing and drawing with pencil and paper, and so I felt like that, I was basically halfway behind everyone else...I think the tablet let me work a bit faster and a bit more diligently...” (Callum)

“I’ve been given access to accessible technology, which is great. It means that I’m actually able to write and draw as if I was like everyone else on the trip..... it was the first time in ages since I’ve felt that my fieldwork has actually been worthwhile” (Daryl)

Pace and timing

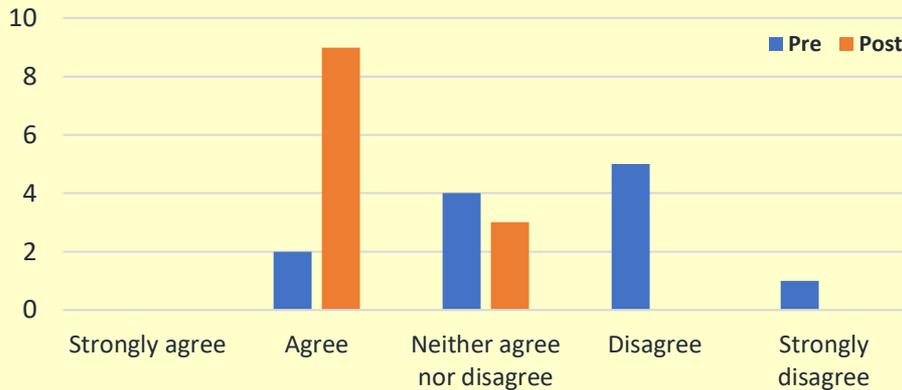


“I’ve really found it a lot easier to grasp each locality and, kind of get on board with what was going on...and it’s felt more comfortable” (Beth)

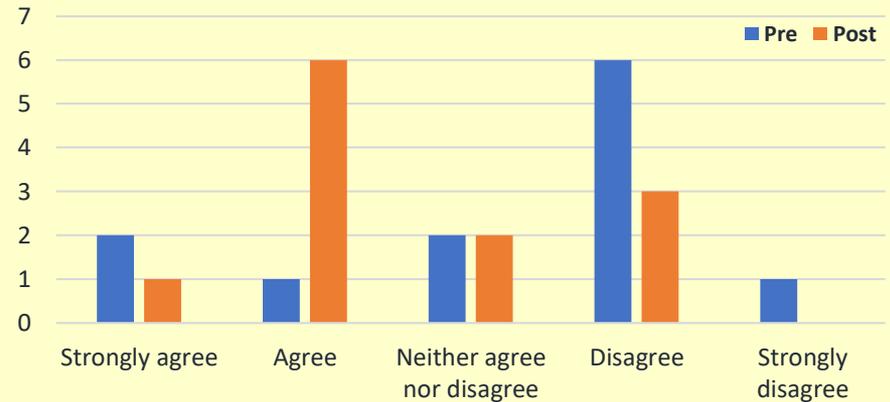
“...because I’m more relaxed it’s easier for me to process and understand the instructions, rather than there being anything different about them” (Frank)

Confidence

I feel confident when carrying out activities in the field



I feel confident answering questions in the field

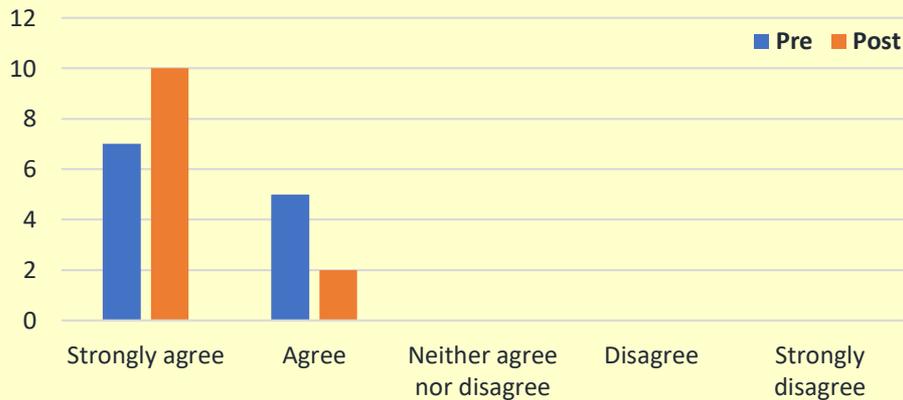


“...all the different resources that we’ve got [have helped me to become more confident]. Like we’ve got the thin sections, and we’ve got the people there explaining it to us if we need them, and the videos and everything...”
(Abi)

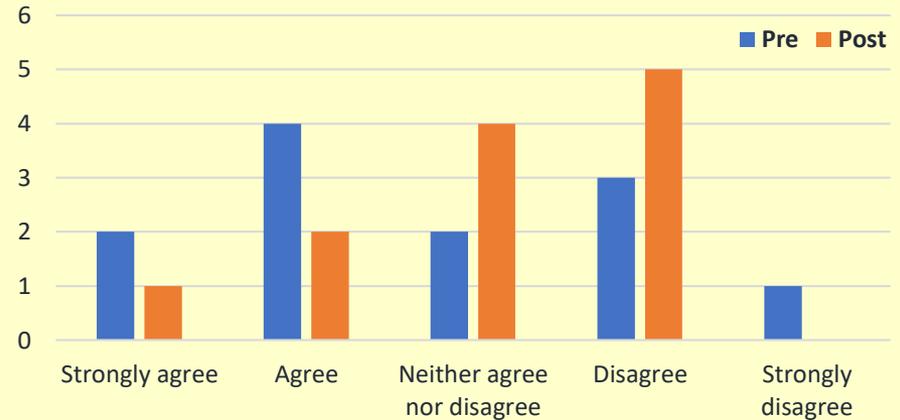
“I’d just like to say that I gained a lot more confidence in my ability to work in the field, and that’s made me a lot happier” (Daryl)

Social inclusion

It is important for students and instructors to work together



I sometimes feel excluded by my peers when doing fieldwork



“...working with other people in general might be good for me in the field, because, actually getting to talk about what I’m seeing and just listening to what other people are seeing, and what they believe the geology is representing I think helps to give me some ideas” (Callum)

Social inclusion

“...when we were sitting in the car and we have the video, and the pictures, and the hand samples and everything, and...I quite enjoyed that, just ‘cos it felt like I was there, and I was doing something and like, part of the team...” (Abi)

“I suppose one single thing [that I enjoyed the most], probably was being out in a group, actually doing the fieldwork, in the field. That was my most favourite part” (Ed)



So what have we learned so far?

Good pedagogic practice is key to making fieldwork inclusive and accessible

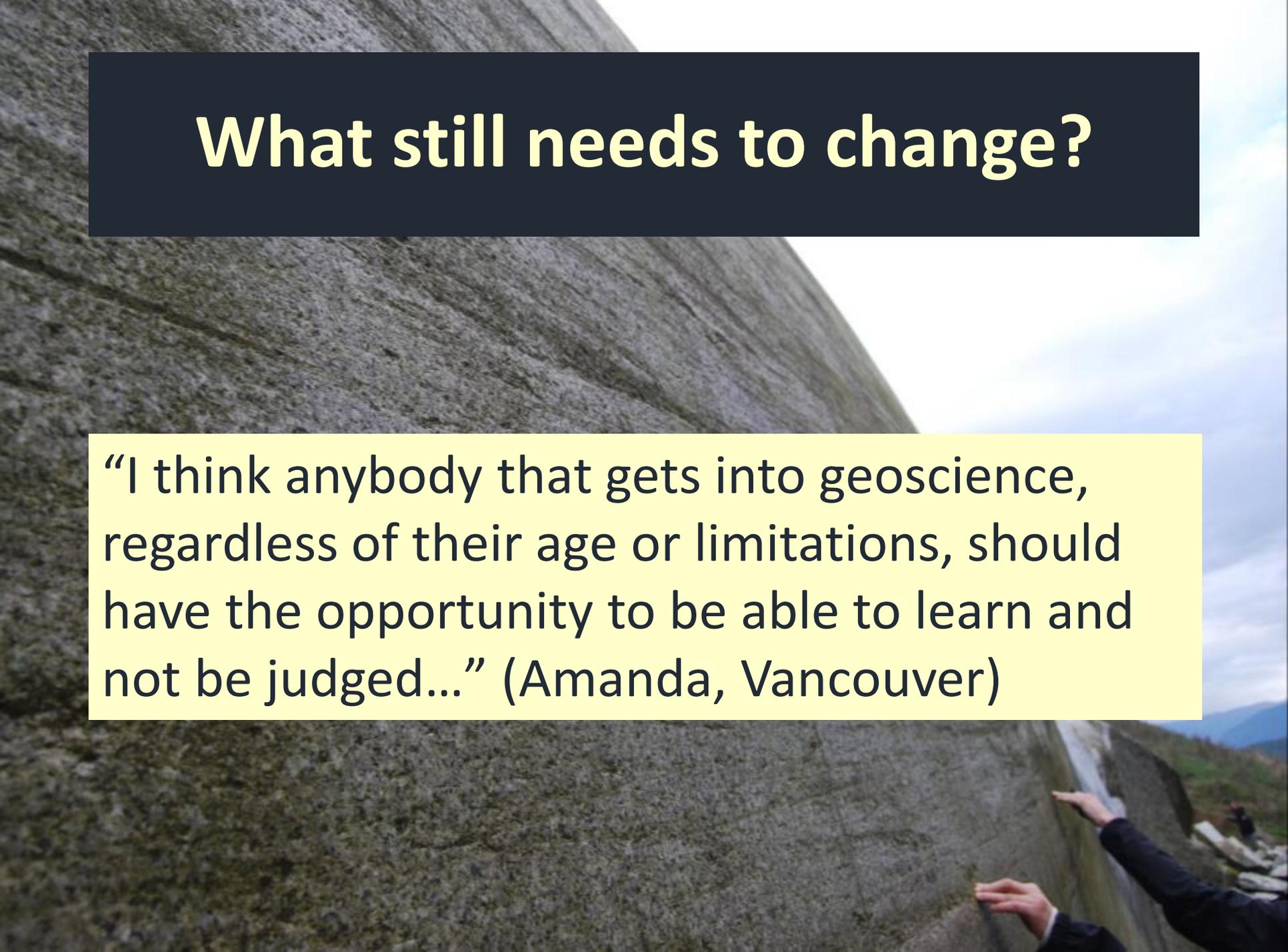
Technology and alternative activities can help with accessing fieldwork, but should not hinder inclusion

Traditional fieldwork 'cultures' can exclude students academically and socially

When students feel included, they feel empowered to advocate for themselves and for others

What still needs to change?

“I think anybody that gets into geoscience, regardless of their age or limitations, should have the opportunity to be able to learn and not be judged...” (Amanda, Vancouver)



References and further resources

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References and further resources

Outputs from the Sea-to-Sky Highway fieldtrip:

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Organisations



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<https://gdn.glos.ac.uk/disabil/index.htm>



THANK YOU!

