

Creating accessible fieldwork: how to make field experiences inclusive of diverse bodies and minds



John Innes Centre

Unlocking Nature's Diversity



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Disability in field-based education: a tale of two parts

- **Part 1: some of the problems** – why we teach in the field, assumptions we make about fieldwork and students, and how things can (and do) go wrong for disabled students
- **Part 2: some solutions** – communicating with students, designing course experiences, ensuring equity in instruction

Part 1: Why do we teach with fieldwork? Are there issues and barriers for all students?

- Why do we do fieldwork in university education and beyond?
 - Field-based experiences in plant science courses can improve student performance and understanding, especially for students not reading in the sciences¹
 - Students feel that hands-on experiences in crop science courses improve job prospects and are good learning tools²
 - “[students] reported that they enjoy fieldwork and value it... and felt that they learn more effectively in the field”³
- ... but fieldwork has issues:
 - “fieldwork has been traditionally viewed as hard, physical, and masculine”⁴
 - “fieldwork and fieldtrips can be deeply stressful, anxiety-inducing, troubling, miserable, hard and exclusionary for many colleagues, students and pupils”⁵

¹Bauerle & Park (2012) *HortTechnology*

²Burr & Knauft (1984) *J Agronomic Education*

³Scott *et al.* (2012) *J Science Education Technology*

⁴Chasen, Tripp, & Borrego (2024) *J Res Science Teaching*

⁵Tucker, Waite, & Horton (2022) *AREA*

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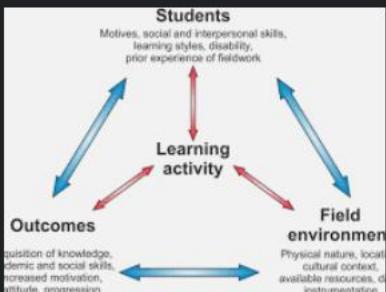
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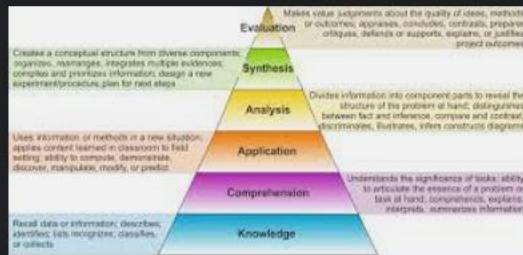
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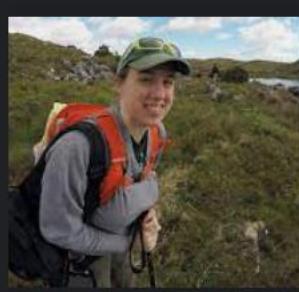
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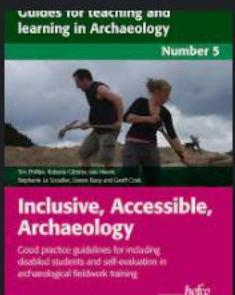
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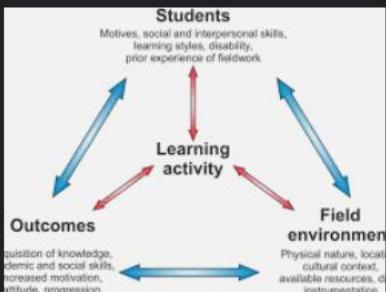
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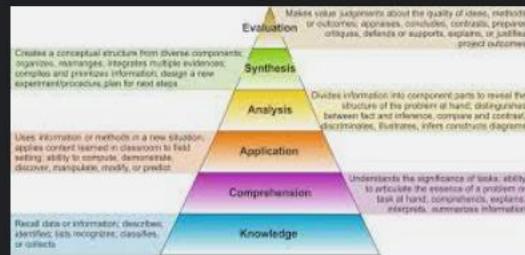
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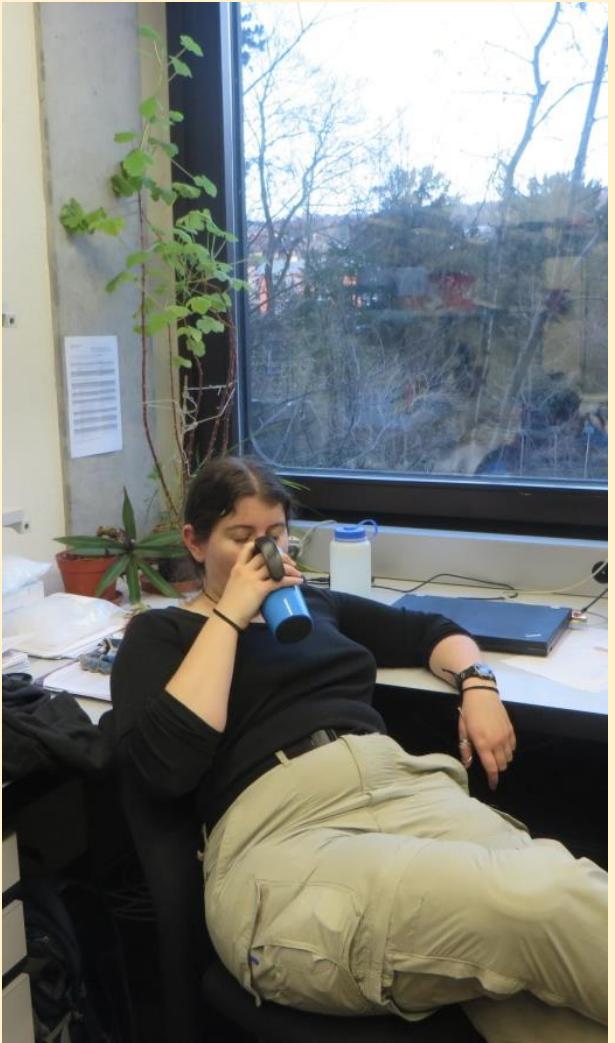


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Part 1: Which of these people is a field biologist?



Part 1: Which of these people is a field biologist?



Part 1: Example: Chloë Stevens, now U. of Bristol

Why is this handbook needed?

“Education and training providers have a duty under the Equality Act 2010 to anticipate the adjustments that disabled students and trainees may need.” - Disability Rights UK.

I personally have experienced being told by field course leaders that I couldn't attend their field courses due to my limited mobility without even discussing possible adjustments. I was offered a conversation with one course leader to discuss my needs and with limited effort we managed to make a field course I could participate in, enjoy and be successful at. Accessibility requirements are often not complicated but just require some creative thinking and a bit of forward planning. Making a field course/research project accessible for me is the difference between me feeling I have a future in Zoology or not.



– Chloë Stevens

Part 1: Common (externally imposed) problems with disability in the fieldwork setting

- Field experiences are often treated as “optional” or a “special case” but may be a *fundamental* part of a person’s course and future employment prospects, particularly in the natural sciences
- Assumption is usually made that a disabled student cannot do fieldwork, due to *inability* or *risk management/liability* – these assumptions are often made *a priori* without discussion with the student!
- **BUT** most fieldwork can actually be modified to support inclusion of disabled students... with a little creativity and a great deal of communication and thinking ahead

Part 1: What barriers and threats do disabled fieldworkers face?

- Environmental threats: inability to remove self from dangerous situations (wildlife, livestock), perhaps higher probability of injury, risks of lone working with some medical conditions (e.g. epilepsy, POTS)
- Communication threats: inability to communicate with the public and authorities if relevant disabilities present (e.g. person is d/Deaf/hard of hearing or nonspeaking/nonverbal, neurodivergence as well) – this also applies to language barriers in general!
- Risk of exacerbating existing health conditions due to often stressful, physical nature of fieldwork
- **Assumptions about competence as a barrier:** fellow students and fieldwork instructors assume things about an individual's competence to perform fieldwork tasks

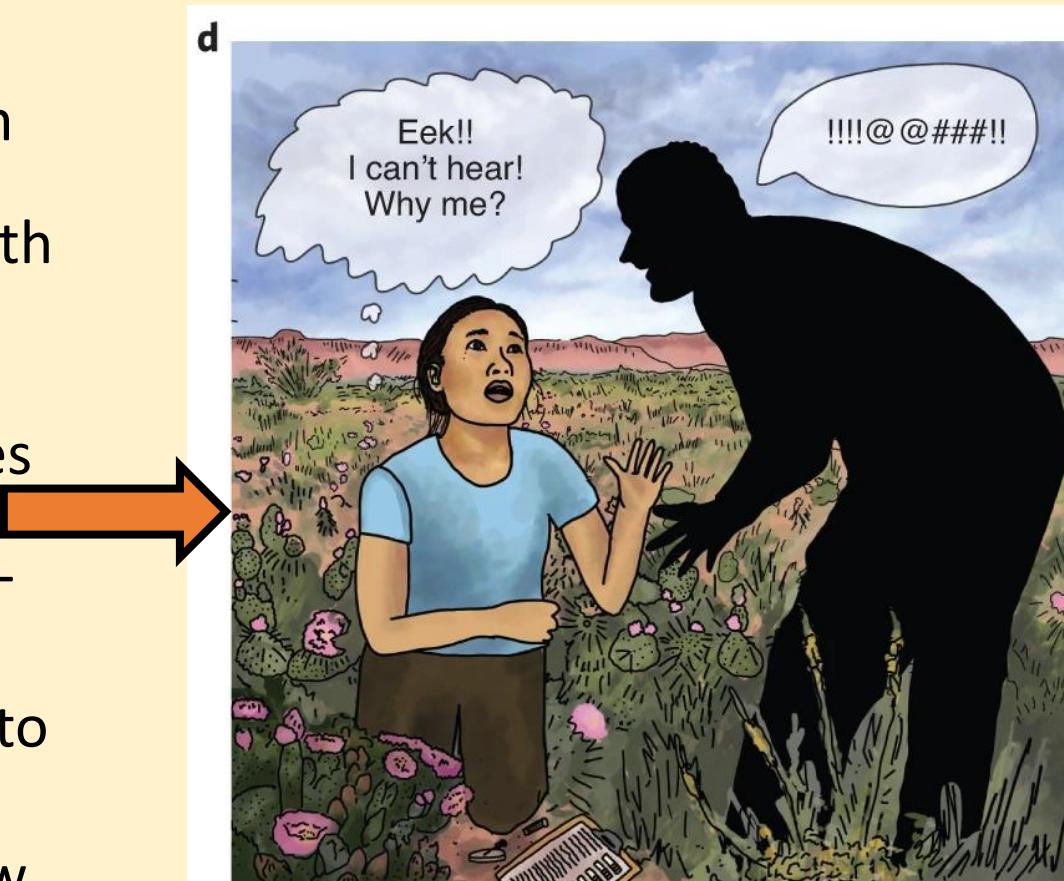


Figure: Demery & Pipkin (2021) *Nature Ecology and Evolution*

Part 1: So, are fieldwork and field-based courses equitable for disabled students in particular?

- “disabled students face significant barriers to participating in field-based sciences due to a lack of accommodations, inaccessible field sites, and limited funding for adaptive technology”¹
- “disabled individuals are on average ‘1.5 times more likely to encounter negative workplace experiences’”¹ (quoting a study² done at the Ecological Society of America 2022 conference)
- Few disabled fieldwork-experienced role models (publicly) exist for fieldwork-interested disabled students
- Many anecdotal reports of students changing courses or being turned away from field-based courses due to disability

¹Chasen, Tripp, & Borrego (2024) *J Res Science Teaching*

²Primack *et al.* (2023) *Frontiers Ecology Environment*

Part 2: Towards inclusive field education

- Communication and trust – this is the most important thing to stress, and needs to be *bidirectional*
 - Communicate with students early and often (see below)
 - Trust that a student's assessment of their abilities is the best truth available
- Five key steps:
 1. Find out as much information as possible from *all* students about barriers to successful field course participation;
 2. Ask yourself a series of questions when planning field coursework;
 3. Distribute as much information as possible to *all* students about expectations, logistics, and planned activities;
 4. Meet with students who express concerns about access to fieldwork **early** to discuss options/strategies;
 5. Debrief/survey *all* students after fieldwork to allow continuous improvement

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Part 2.1: Learn about your students' access needs

- Survey *all* students about access needs prior to embarking on fieldwork. Why all students?
 - Not all students who are eligible for support identify as disabled;
 - Not all students are eligible for Equality Act and similar adjustments or are registered with the relevant student office;
 - Not all students will be comfortable telling you that they are disabled
- Example questions might include:
 - ¹“Here are a list of activities, please check the box which best describes your ability to do the given activity or self-describe:
 - Walking on a footpath over even ground for fifteen minutes
 - Writing on a slate or notebook while standing or sitting
 - Communicating with a field partner or group member verbally
 - Bending over repeatedly and/or sitting and standing repeatedly”¹
 - “Are there adjustments I can provide to make your field course successful?”

Part 2.2: Questions when planning field coursework

- What are the actual *fundamental tasks* involved?
- Does *every* individual need to perform *every* task?
- What *other extra factors* (accommodation, transport to the site, *etc.*) can be modified?
- How does *a particular individual's disability* affect their ability to do the fundamental tasks?
- What *accommodations can be made* to enable as much participation as possible?

Part 2.3: Distribute information to students

- Disabled students – in fact, **ALL** students - benefit from information in advance about **logistics, activities, and expectations**
- **Logistics:** consider transport and accommodation information, toilet availability, private places to administer medications, when meals will be taken and what food will be available
 - *Example: a student with Overactive Bladder Syndrome will need to know where the closest toilet is at all times, or if they are expected to “wild wee” while in the field*
- **Activities:** give detailed information about what students will be doing in the field (Hiking? Collecting specimens? Sketching? What will the terrain be like?)
 - *Example: a student who uses a wheelchair will need to know whether the trails are rocky or full of roots, involve steps, and are of a suitable gradient (i.e. not too steep)*
- **Expectations:** tell students in advance what the goals and assessments of the field experience are
 - *Example: an autistic student will often benefit from clear, concrete information about how their work will be assessed in advance*

Part 2: Case study: Kelsey and the entomology class field trip: fatigue/chronic health conditions



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Abled instructor's view

- *Fundamental tasks*: Explore many habitats on foot, catch lots of insects, pin and identify them all the same day
- *Every individual*: yes, all students must do it all together
- *Extra factors*: transportation involves hiking on forest roads and over rocky terrain, accommodation is in rickety bunks
- *Particular disability* not considered/assumptions made about ability to get by without sleep
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Actual reality

- *Fundamental tasks*: catch, pin, ID insects in novel habitat
- *Every individual*: could put students in teams – some catch, some pin/ID
- *Extra factors*: consider better accommodations, sampling closer to field station vs hiking or split class in half (some hike, some stay close)
- *Particular disability*: move slow through terrain, communicate about the situation in advance & throughout, set a “stop work” time for sleep and dinner
- *Accommodations*: don't require students to sacrifice sleep for science

Final thoughts on Parts 1 and 2

- Typical field courses can be challenging for disabled students
 - Biggest challenges are often ***assumptions*** by administrators or instructors that students are unable to – or uninterested in! – participate in field experiences
 - Many students change courses or leave university without field experience due to **exclusion based on disability**
- However, this is changing, albeit in a grassroots-based way
 - **Example handbooks** on designing accessible fieldwork exist (e.g. U. of Bristol)
 - Inclusion and experiences of disabled students in field courses is a **growing research area**
- Best practices can be put in place to support student inclusion
 - **Communication and trust** – bidirectionally! – are key to inclusion
 - Consider the **five key steps** to boost inclusion in your field courses

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