

Virtual fieldwork: real-world communities

Project report

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Summary

This document reports on a project funded under the Open University Research and Enterprise Services pump-priming scheme from November 2020 – July 2021. The co-PIs were Prof. Eileen Scanlon and Dr Sarah Davies; other members of the core team were Dr Trevor Collins and Dr Ann Grand. The research was carried out by a team of four OU Associate Lecturers: Joanne Craven, Heather Kelly, Snezana Levic and Stephen Bater.

‘Real-world’ fieldwork has long had a respected place in education at all levels, however, there remains a gap in our understanding of how the principles of fieldwork apply across different communities and – in a world in which alternatives to physical fieldtrips are increasingly available – the ability of alternatives to replicate and extend the social engagement offered by real-world trips.

Through a literature review, interviews, surveys and observation, we investigated three questions: to what extent can an alternative fieldtrip be a shared experience? What is the role of fieldwork in building learning communities? What is the role of different technologies in shaping analogues of traditional fieldwork?

Technologically-based fieldwork analogues offer those who cannot access traditional fieldwork a chance to experience its values. Analogues can be visually and interactively rich and reach people in formal and informal settings and across socio-economic divides.

However, analogues cannot entirely replace traditional fieldwork, as some of the methods by which they can be delivered to very large audiences stifle individual participation. There are also important sensory elements and social bonding experiences which are hard to deliver online.

A blended approach to fieldwork, in which online learning communities of students are supported to develop questions which they can then take, individually, into their local setting may be one useful way forward, along with less frequent trips to more distant locations for which students are prepared in advance with virtual field trips.

The core team has held several meetings with members of the education team at the Field Studies Council. Building on the data from this pump-priming project, we are exploring possibilities for a funding proposal focussing on how the combination of outdoor and technology-enhanced science education could help to address the problem of poor STEM engagement and increase science capital among young people in areas of multiple deprivation.

Project proposal

The experience of teaching and learning in real world environments has immense long-term value. ‘Real-world’ fieldwork has long had a respected place in education at all levels (Lewis, 2016) for its virtues in taking participants out of the classroom or lecture theatre, casting teachers and students alike into an unfamiliar environment and enhancing relationships and skills through shared experiences (Collins & Cooke, 2019).

However, for some years now, there has been a world-wide decline in the offering and uptake of educational fieldwork opportunities (Argles, et al, 2017). Many factors contribute to this: financial (e.g. participants from low-income families), practical (e.g. participants with physical disabilities (Whitmeyer, et al , 2020)) and cultural (e.g. children educated at home). This decline is currently exacerbated by the restrictions of the Covid-19 pandemic and in the longer term, will undoubtedly be affected by restrictions on travel as a response to the climate emergency.

In response, educators have devised many kinds of alternative and analogous experiences – real and virtual, remote and in-person, synchronous and asynchronous. Virtual fieldtrips, mobile technologies and ‘fieldcasts’ (interactive field broadcasts) (Wheeler, et al, 2018) have the potential to increase interaction and collaboration (Minocha, et al, 2018) and thus to overcome systemic and other barriers and allow both students and educators to benefit from the educational value of fieldwork (Carabajal, et al, 2018). Online, participants can ‘travel’ anywhere; to remote and fragile environments and physically and financially inaccessible places: the salt plains of Botswana, inner-city London or even the surface of Mars.

Moreover, alternative fieldtrips do not necessarily require all participants to be in a single place, suggesting they could be a way for geographically-dispersed participants to share something of the experience of becoming part of a learning community.

However, there remains a gap in our understanding of how the principles of fieldwork apply across different communities, the ability of alternatives to replicate and extend the social engagement offered by real-world trips (Atchison, et al, 2019) the added value offered by alternatives and the role of different technologies in shaping and framing the analogous environment.

Research questions

Therefore, this project sought to address three research questions:

1. To what extent can an alternative fieldtrip be a shared experience?
2. What is the role of fieldwork in building learning communities?
3. What is the role of different technologies in shaping analogues of traditional fieldwork?

Background

What makes fieldwork valuable?

For educators in geography, geosciences and ecology, fieldwork offers rewarding experiences for staff and students, facilitates positive teacher/student interactions and can improve student recruitment and retention. Students' attitudes to fieldwork vary enormously, from addicts to sceptics, although the majority see clear benefits (Dunphy & Spellman, 2009) and their perceptions help determine how they approach it and what they take from it.

Shared experiences during a field trip help build teacher-student relationships; students can question staff informally, developing their discussion skills and environmental literacy (Friess et al., 2016; Minocha et al., 2018). One of the highlights of fieldwork for students is, often, the chance to interact with staff and their peers (Hart et al., 2011), particularly for students studying remotely (Fuller, 2006). Students appreciate being able to ask questions of their tutors, as these arise, on fieldtrips, demonstrating their desire for more deep learning opportunities (Freiss et al., 2016).

Fieldtrips provide an opportunity for students to put theory into practice, enabling deep learning and understanding (Boyle et al., 2007). Well-integrated fieldwork forms part of a spiral curriculum, in which students not only revisit concepts covered in class but also acquire deeper levels of understanding, which they then apply to subsequent learning (Fuller et al., 2006). However, it is not a simple relationship; experiential learning can be undermined in 'real places' populated by 'real people' because of the unpredictability of the environment but disrupted expectations can also stimulate valuable critical reflection on the practices involved (McGuinness & Simm, 2005).

Students also value fieldwork for its inspirational value (Dunphy & Spellman, 2009). Working in unfamiliar, sometimes spectacular, settings can provide powerful motivation, though encouraging students to find the unfamiliar in a familiar, local context can be equally valuable (Lambert & Reiss, 2016). Some appreciate being outside and seeing the ecological context of organisms studied, (Scott et al., 2012), while the multi-sensory nature of working in the field makes the experience more memorable (Stokes et al., 2012).

Nevertheless, fieldtrips are in decline in many HE institutions in the UK. The size of student cohorts, cost (especially for students in part-time employment), worries about health and safety and staff workload and confidence are all cited as reasons (Smith, 2004). The expense of fieldtrips means lecturers can feel responsible for providing value for money, hindering their ability to use novel teaching strategies and leading to assessment-driven fieldtrips (Herrick, 2010). Those in charge of curricula and budgets sometimes perceive fieldwork as expendable; subjects can be studied more

simply, quickly, safely and cheaply without venturing into the messy, unpredictable real world (Lambert & Reiss, 2016).

Real or analogue fieldwork – does it have to be all or nothing?

Cooke et al., (2021) view virtual fieldwork as a tool to complement traditional ecology teaching rather than as a replacement. Given that most undergraduates are now ‘digital residents’ (White & Le Cornu, 2011), there is a strong argument for building enhanced digital literacy into all courses, including fieldwork (Fuller & France, 2016).

Effective use of technology can certainly enhance learning (Welsh et al., 2013) though there is still little evidence that students learn better in an entirely virtual environment, perhaps because of the cognitive overload identified by Petersen et al. (2020).

Not all students can access, or benefit from, physical fieldwork; social interaction and the learning experience affect one another strongly but there are still issues around ensuring that students with disabilities can participate fully. Inclusion can, however, be fostered by using technology to facilitate collaboration between students (Atchison et al., 2019). Tools which make field science more accessible for people with disabilities can benefit all students (Sima, 2020). Fieldwork analogues are generally more inclusive but physical trips can be made more accessible, for example by using mobile computing technologies to help less mobile students communicate and collaborate with students physically in the field.

Virtual trips have some advantages (Atchison et al., 2019; Cooke et al., 2021). They can permit fieldwork in fragile or remote locations, in

scenarios deemed too difficult, dangerous or expensive to experience in real life and increase interaction (Stokes et al., 2012; Bursztyn et al., 2017).

Fieldwork analogues

Although HE institutions (in particular the Open University), learned societies and other organisations have been developing alternatives to in-person fieldwork for many years, organisational responses to the strictures imposed by the Covid-19 pandemic undoubtedly gave added impetus to the process. Analogues fall broadly into these categories:

Broadcasting

During the UK’s Covid-19 lockdown in summer 2020, the Field Studies Council offered live broadcasts from its field centres (e.g. [Rocky Shores](#)). In real time, tutors and students had access to a chat box for questions and discussion.

Remote fieldwork / fieldcasting

When students cannot access sites in person, instructors can visit on their behalf and livestream what they are seeing and doing to students working remotely. In the OU’s environmental science module S206, students participate in designing the investigation and analysing the data; staff facilitate sampling and data collection according to the students’ design.

Virtual field trips

Virtual field trips vary in complexity, from virtual field guides to an area to detailed, interactive visual landscapes, such as the Open University’s *Virtual Skiddaw*.

Virtual reality

The goal of virtual reality is to completely immerse the user inside a computer-generated world, giving the impression that they have ‘stepped inside’ another reality. The decreasing costs of the technology involved (headsets) and increasing adoption of the techniques of computer gaming are improving the complexity possible in the experience of VR.

‘Travelling’ to diverse global sites allows broader exploration of interactions between humans and their environment than a visit to any single site. Virtual introductions to field sites allow students to build skills and confidence in a controlled environment. Adding new ways to explore the world and collect data, inevitably, benefits everyone; virtual trips permit repeat visits, for example, so students can observe seasonal change in a landscape rather than a snapshot (Cooke et al., 2021). Whilst eager to be in the field, students want to get value for money (Herrick, 2010) for the time they spend there; many like the idea of using video introductions or recordings of remote field exercises to prepare for in-person visits (Stokes *et al.*, 2012; Freiss *et al.*, 2016).

Learning communities

Vygotsky (1978) first articulated how human learning depends on those around us. We learn a skill from a ‘More Knowledgeable Other’ until that skill is secure and our ‘Zone of Proximal Development’, where we next need help, is extended. Learning communities can improve academic outcomes for all students (Matthews et al., 2012); Jessup-Anger (2015) suggests that humans learn best when in a group with the same interests and goals; a learning community that promotes individual and collective learning.

Fink and Hummel (2015) identify core practices of communities that strive to make excellence inclusive, aiming both to enhance educational quality and promote student success. These include creating learning communities for specific groups, fostering bonds between students and with the institution, offering robust support to bolster students’ self-confidence and advocating for systematic improvements. However, they worry whether enough is being done to engage underserved students (such as part-time students with other commitments), for whom these communities might be particularly important.

Fieldwork, with its natural opportunities for ‘off-topic’ conversations, can play a key role in fostering relationships between staff and students (Hart et al., 2011), while shared endeavour creates collaborative relationships (communities of practice (Lave & Wenger, 1991)), like those in a professional working environment. Extended residential trips are not the only way to generate a learning community, however. Peacock et al. (2018) found that a weekly integrated Field and Environmental Techniques module on campus built good relationships between students and with staff.

Given the demonstrable value of learning communities, sustaining them online is important. Virtual learning communities can be an extension of a face-to-face learning community or completely separate. They can be academically-focussed or more relaxed; Genge and Sutton were surprised and pleased to find that their multi-player fieldtrip video game became a place for students to socialise,

messing around as they would in the field and using the virtual space after hours (Andrews, 2021). There are technological, social and pedagogical aspects to fostering a genuine sense of belonging to what Chen (2003) calls 'Networked Learning Communities'. She identifies four important attributes: interactivity (to promote student-centred learning), opportunities for collaboration (to motivate and make the most of the available expertise), meaningful and motivating context (real-life problems in authentic settings) and a continuously-available learning environment (independent of location, operating asynchronously).

Methods

The research methods for this project were reviewed by, and received a favourable opinion from, the Open University Human Research Ethics Committee (reference number 3842), and the Open University's Student Research Project Panel (reference number 2021/1752).

This project addressed three research questions:

1. To what extent can an alternative fieldtrip be a shared experience?
2. What is the role of fieldwork in building learning communities?
3. What is the role of different technologies in shaping analogues of traditional fieldwork?

To explore the research questions from the perspective of lecturers, students and other stakeholders, we conducted three strands of research:

1. evaluation of two **fieldwork experiences** selected to represent different learning community experiences:
 - i. an environmental science '**fieldcast**', as experienced in a dispersed community of OU students:
 - a. observation of the fieldcast
 - b. online survey of randomly-selected student participants
 - c. semi-structured interviews with staff involved in the fieldcasts
 - ii. observation of a **Fieldwork Live** course run by the Field Studies Council as experienced by a home-based participant
2. semi-structured interviews with eight stakeholders
3. a literature review relating to fieldwork and analogous fieldwork experiences

Observation

Observation permits a researcher to contextualise other research data, become aware of subtle or routine aspects of a process, and gather more of a sense of an activity as a whole. One researcher (JC) was given access to data from the February 2021 fieldcast for The Open University module S206/SFX206 *Environmental Science*: recordings of the three parts of the fieldcast and anonymised logs of connections, widget interactions and chat messages exported from Stadium Live. The second researcher (SB) was registered as a participant on the Field Studies Council eco-skills course *Conservation of Marine Mammals*; he was able to review the online learning materials and watch recordings of the live workshops.

Online survey

We ran an online survey of students on S206/SFX206. The survey was hosted on JISC Online surveys; respondents were invited to participate through a personalised email, with one reminder sent out 21 days after the initial invitation. The survey was open to respondents from seven to 37 days after

the fieldcast. Via the Student Research Project Panel (SRPP), we requested a sample of 20% of available students studying S206 and SFX206, which gave us a list of 123 potential respondents, of which 17 responded to the survey (13% response rate).

Interviews

The purpose of an interview is to explicitly explore the understandings, reflexivity and potential agency that participants experience in relation to the case being studied. (Clegg & Stevenson, 2013). By creating a space in which people can reflect on their circumstances and identity (Müller & Kenney, 2014), semi-structured interviews provide direct access to participants' insights, experiences and opinions (Tong et al, 2007). Using open-ended questions and a flexible structure allows participants to provide answers in their own terms and permits the interviewer to improvise in a thoughtful way in response to participants' insights (Groves, et al, 2004).

JC interviewed five members of Open University staff involved in the S206/SFX206 fieldcast; SB interviewed eight stakeholders (teachers, environmental organisation volunteer and university lecturers). The interviews were audio-recorded and transcribed into text by a transcriber unrelated to the project. The data were imported into nVivo12 for analysis.

Analysis

Observations: S206 fieldcast data were analysed by JC; Fieldwork Live by SB.

Survey: JC downloaded and analysed the data.

Interviews: JC and SB thematically coded the data. Table 1 shows example responses for some of the themes they identified.

Theme	Example
Socio-economic issues	the school as a whole was very disadvantaged it had a lot of disadvantaged kids there. (S3)
Fieldwork analogues	virtual presentations and we also have educational videos that they can watch as well as some activity workbooks that can go with it. (S5) the camera can show you the salient bits that you want to describe (T1)
Shared experience	They try to show that we're all in this together (T2) Parallel conversations are happening [...] for some folks you can see why that's distracting (T5)

Results

This section brings together evidence from the three strands of the research. Data labelled 'Sx' come from interviews with stakeholders, 'Tx' from interviews with fieldcast tutors and staff and 'Px' from responses from the student survey.

Research Question 1: To what extent can an alternative fieldtrip be a shared experience?

Fieldcasts can be an engaging experience. In the S206 fieldcasts, about 86% of users engaged with each interactive element and around 60% (n=250) contributed to the chat. The chat was used for social, academic and technical purposes. In the chat, students said they *"enjoyed the interactive elements"*, that it was *"a really interesting idea to do crowdsourced experimental design"* and that it was *"really inclusive"*. From the survey, just over half of the students who attended live and a third of those who watched the recordings felt the fieldcast was a shared experience:

[a highlight was] how involved all the students were in deciding on the experiment (P15)

As I miss[ed] the live [session] I wasn't able to take part in the voting or chat in the box but being able to see from a video perspective made me feel like I was there (P12)

However, not all the fieldcast students had the sense of taking part in a shared experience:

only to the extent that other students were online at the same time (P8)

it was more like watching a documentary on TV and learning from it. (P2)

The fieldcast tutors noted obstacles to creating the sense of a shared experience online, citing the difficulty of creating discussion with large group sizes, the lack of shared physical challenges (such as getting wet or cold), and the lack of informal social time. Stakeholders also noted the sense of separateness; that in an online experience the relationship is between the student and the technology, rather than the student and the leader:

it can be a lot more difficult to engage people when they're just staring at a screen ... a lot harder to have that back and forth repartee with students especially because I might not see the students at all throughout the whole experience ... they might all be watching me on a big screen but I can't necessary see them or engage with them (S5)

The fieldcast tutors highlighted important factors in creating the sense of a shared experience: running the event live to ensure a sense of presence, using a relaxed and funny presenting style and making good use of the interactive widgets and chat. Tools such as chat allow students to interact with each other and with lecturers and help them feel they are part of a group; they might not be able to hear each other's voices but they can read each other's thoughts. Although a few S206 students felt tools such as the chat were not useful, they related this more to the size of the group (around 200 students) than to the tool itself.

Research Question 2: What is the role of fieldwork in building learning communities?

Fieldwork is viewed as integral to teaching and gaining of knowledge, as well as offering benefits such as inclusion, holistic development and student-centred learning that involves the senses of sight, hearing, touch, taste and smell. In terms of the role of fieldwork in building learning communities, a strong theme for tutors was the use of fieldwork to model a positive and productive approach being part of the environmental science community:

community building is a really important aspect of any education (T1).

Fieldwork models the experience of being a professional in the environmental science community, which can help students feel a sense of belonging. However, while acknowledging the usefulness of learning communities when they do emerge, one felt they are not something which can be imposed from the top down:

in some contexts 'communities' is a bit overused [...] for distance learning students with limited time, the thought of having to get to know a load of people as well feels sometimes like an extra overhead (T5)

Students had a range of expectations for fieldwork, including using different equipment, experiencing the outdoors and new places, learning to adapt to the conditions, putting theory into practice and engaging with other students and with lecturers. Fieldwork can be daunting for some students, partly through a fear of getting things wrong; seeing a positive attitude modelled by the lecturers can show how lecturers handle the issues which emerge:

[we show] that we have put ourselves into a situation that we don't know what's going to happen and then we manage it and enjoy managing it (T2)

And demonstrate that fieldwork is a team effort:

[we need them to] have a go [...] because we can't get any further without their engagement - we're stuck here in the rain and we are waiting for their response" (T3)

people are communicating in groups about what they are finding ... they are passing that information backwards and forwards. they're moderated by an academic who's helping them to help each other (S2)

What is a community?

The concept of a 'learning community' is central to the discussion of the role of fieldwork in learning but its meaning can never be taken for granted and is something that some interviewees found hard to express.

A community could be defined as a group of people living in the same place, but during the Covid pandemic, as never before, 'scattered groups of people unknown to one another, rarely living in contiguous areas, and sometimes never seeing another member, have nonetheless been able to form robust social worlds' (Brown & Duguid, 1996, p. 3); communities are now more about shared experience.

People sharing an interest or experience in common can form a 'community of practice' (Wenger, 2000) where learning can arise from the shared experience.

Fieldwork is seen as important for enabling hands-on experience, developing understanding of complexities and being able to ‘think on your feet’ but also for bonding students with each other and staff. The fluid, less formal ambience of fieldwork enhances relationships between students and facilitators, increasing their feelings of belonging to a group.

Research Question 3: What is the role of different technologies in shaping analogues of traditional fieldwork?

In considering the role of technologies, we should take two issues into account. The first is different understandings of what ‘fieldxxx’ means. Some respondents talked about *fieldtrips*, others about *fieldwork*; for some they were primarily social, for others primarily educational experiences. We could draw the analogy of a tourist visiting a country and an anthropologist studying a community in that country; each has different expectations, needs and anticipated outcomes.

Field experiences

Interviewees drew on different descriptions and experiences of in-the-field experiences.

Social experience

Experiences out of school to build social and daily living skills, especially for students living with learning disabilities.

Fieldtrip

An excursion to a place away from the normal school environment, not necessarily primarily for educational purposes e.g. “[we] took a class down to the beach and they spent the whole day lifting rocks, playing in the rock pools, having unbelievable fun” (S4)

Fieldwork

Practical teaching, research or study conducted in the natural environment.

Field course

Longer-term specialised, project-based courses conducted in the natural environment, sometimes forming part of an undergraduate degree in biology, ecology or environmental sciences.

The second issue is respondents’ differing definitions of virtual/analogue/alternative; descriptions ranged from watching a television programme to a full-scale virtual reality experience (see Box 1 page 6).

The Covid-19 pandemic has accelerated take up of communication tools and their use in fieldwork experiences, both hardware (laptops, tablets, mobile phones, virtual reality), communication software (YouTube, WhatsApp, MS Teams, Skype, Zoom) and social media (Facebook, Twitter). The FSC’s *Conserving Marine Mammals* course used videos, images, quizzes, self-exploration exercises and interactive webinars; the S206 fieldcast used voting widgets and live chat and a rich range of

video, including drone footage, video from roving and fixed cameras, live presenter video feeds, time-lapses and still photos, mixed live:

excellent images and videos with drone footage really helped get a feel for the location (student feedback)

being able to see from a video perspective made me feel like I was there (student feedback)

The use of virtual and digital resources allows contextualisation, flexible access to the module material, data and secondary information sources and participants to reflect and revisit areas. For participants, thoughtful use of technologies can create flexible learning journeys and an engaging, positive and enlightening experience.

Traditional fieldwork conducted in natural environments brings challenges for participants with mobility, visual or hearing impairments or learning disabilities, or whose families cannot meet the costs.

especially if we're going on a tour that may be costly ... £10 could be nothing to you or me but it could be a family buying bread for a week (S8)

it is harder and harder to justify charging [university] students ... the cost of fieldwork experiences is often a bone of contention (S2)

In coastal, mountain, hill and woodland settings, access, health and welfare, hygiene and food and drink requirements are all important considerations. Analogue fieldwork can be a way to meet such challenges and offers other benefits for teachers/facilitators: greater sustainability (through reduced travel emissions and reduced degradation of over-used field sites), lower costs in staff time, fewer administrative tasks, easier planning, fewer safety and behaviour challenges and the ability to tailor and revise fieldwork to meet students' needs:

Analogues widen the field of potential experience:

you can basically go wherever you want to go ... if you want to do the future in the Arctic it's possible ... in the virtual" S1

However, teachers/facilitators are also conscious of the 'digital divide' and the possibility of a two-tier system emerging, where affluent schools and institutions are more likely to have access to better learning platforms. Institutions in disadvantaged areas face many challenges on limited budgets; additional technology for analogue fieldwork might be seen as desirable rather than essential. Students in these areas might not have access to technology at home if the household cannot afford it.

Learning

Asking whether virtual field trips can replace traditional field trips is perhaps the wrong question ... An integrated approach of lectures, virtual and real-field trips supports a social constructivism mode of learning and allows students to construct multiple links between lecture content and the world outside the lecture hall (Friess et al., 2016, p.562).

In an uncertain, post-Covid world, in which both the educational and physical climate are changing rapidly, educators need to be creative. Fieldwork analogues offer a chance to experience the process for those who cannot access traditional fieldwork, whether due to physical, financial, organisational or emotional constraints. Technology allows the experience to be visually and interactively rich, and to reach pupils and students in formal and informal settings and across socio-economic divides.

However, analogues cannot entirely replace traditional fieldwork in all situations, as some of the methods by which they can be delivered to very large audiences reduce individual participation. There are also important sensory elements and social bonding experiences which are hard to deliver online.

A blended approach to fieldwork, in which online learning communities of students are supported to develop questions which they can then take, individually, into their local setting may be one useful way forward, along with less frequent trips to more distant locations for which students are prepared in advance with virtual field trips.

Outcomes

In the proposal for pump-priming funding, we hoped that this project would lead to an international interdisciplinary bid. We have had several meetings with members of the education team at the Field Studies Council and together we are exploring possibilities for a funding proposal focussing on how the combination of outdoor and technology-enhanced science education could help to address the problem of poor STEM engagement and increase science capital among young people in areas of multiple deprivation.

The horizon scanning we carried out as part of this project (see Appendix 4) suggests that an appropriate targets would be the Nuffield Foundation [Research, Development and Analysis](#) fund, which seeks projects that inform the design and operation of social policy and practice across the Foundations three core domains of Education, Welfare and Justice.

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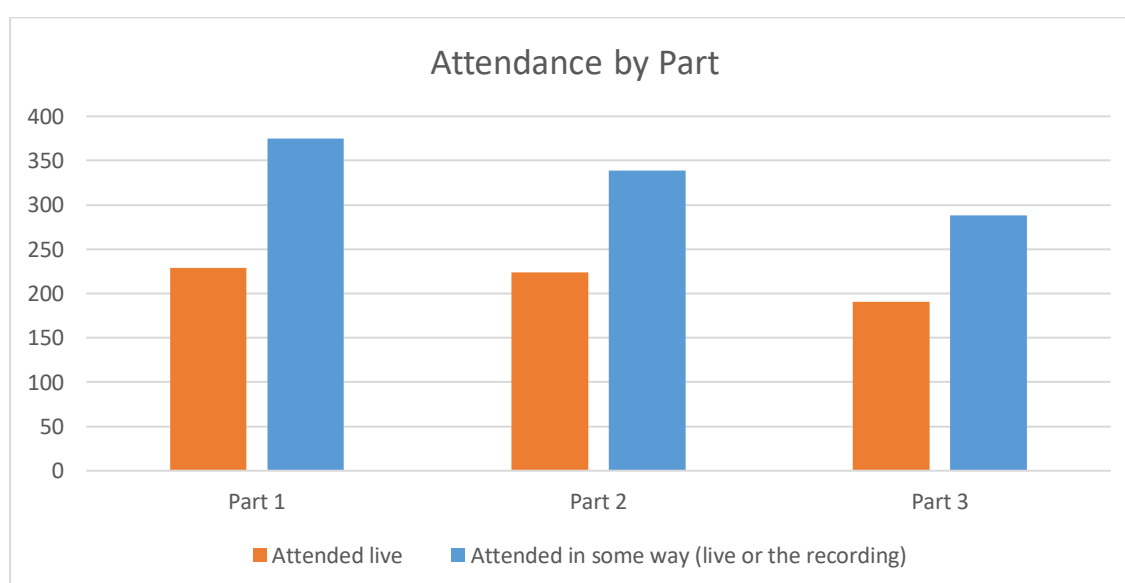
Appendix 1 - Observations

The **fieldcast** was held as part of OpenSTEM Labs for The Open University modules S206 and SXF206. The fieldcast comprised three parts, each lasting approximately 45 minutes:

- Part 1: Making observations and developing hypotheses
- Part 2: Developing methods and beginning data collection
- Part 3: Analysing data and making conclusions

Parts 1 & 2 ran on Saturday 20th February 2021 at 12pm and 1:30pm, and Part 3 ran on Wednesday 24th February 2021 at 6:30pm. The fieldcast ran through Stadium Live. A replay was made available for students to watch after each fieldcast.

The fieldcast involved five members of staff: three presenters, one person managing the chat and one person managing the video feed. Overall, 380 students engaged in some way with the fieldcast; 156 (41%) attended all three parts live, 264 (69%) attended at least one part live, and 281 (74%) engaged in some way with all three parts (either live or through the recording).



JC watched recordings of the fieldcast sessions and reviewed anonymised logs of connections, widget interactions and chat messages exported from Stadium Live.

(SB) was registered as a participant on the **Field Studies Council eco-skills course** *Conservation of Marine Mammals* in June 2021; he was able to review the online learning materials and watch recordings of the live workshops.

Appendix 2 – Survey

The sampling for survey participants was done through the Open University Student Research Project Panel (SRPP), which reviews and assesses all research projects which involve the collection of information from students. The SRPP ensures there is no overlap with other research and checks whether the students have opted out of research and, to avoid over-surveying, have been surveyed more than twice in a year.

We requested a sample of 20% of available students studying S206 and SFX206, which gave us a list of 123 potential respondents. We sent a personalised email (and one reminder) to this group; 17 students completed the survey (13% response rate). Of these 11 had attended the fieldcasts live, and six had watched the recordings. The survey was carried out online using the JISC Online Survey tool. The students responded to the survey between 7 and 37 days after the end of the fieldcast.

The questions were:

1. Have you ever taken part in a traditional fieldwork experience?
2. Could you describe what you liked about taking part in a traditional fieldwork experience?
3. Could you describe what you disliked about taking part in a traditional fieldwork experience?
4. Casting your mind back to before the fieldcasts, please list up to three things you hoped to get from the fieldcast sessions:
5. To what extent were your hopes for the fieldcasts realised?
6. To what extent did you feel that during the fieldcasts you were taking part in a shared experience with other students?
7. What were your positive experiences of the fieldcasts?
8. Did anything spoil your participation in the fieldcasts?
9. If you have a suggestion for a way to improve the fieldcasts, what would it be?
10. Please list up to three words or short phrases that describe your interactions with other students during the fieldcasts:
11. Please list up to three words or short phrases that describe your interactions with lecturers/lecturers during the fieldcasts:
12. Do you have any other comments about interactions among participants during the fieldcasts?

Appendix 3 – Interviews

Fieldcast tutors

JC interviewed five members of OU staff involved in the fieldcast. Their roles in the fieldcasts included managing the chat box, presenting and technical roles.

Participant	Experience
T1	Had done fieldwork as a participant and independent researcher, as well as helping to organise logistics for field courses. This was their first experience facilitating a fieldcast
T2	Had taught on field courses at the OU and elsewhere and was also involved in designing and leading field tutorials and teaching
T3	Fieldwork experience, experience in designing virtual fieldwork alternatives and in producing the fieldcasts
T4	Running field courses at the OU and elsewhere
T5	Experience developing technologies used for fieldwork learning

Stakeholders

SB used purposeful sampling to identify and select participants using personal, professional, Open University and network connections.

Participant	Profession
S1	University Lecturer
S2	University Professor
S3	Secondary School
S4	Primary School Principal
S5	Rescue Centre Volunteer
S6	Primary School Teacher
S7	Special Educational Needs Teacher
S8	Primary School Teacher

Interview starter questions:

- From your perspective, what purposes does fieldwork learning serve?
- Have you ever led or facilitated a traditional in-person fieldwork learning experience? What would you say are the pros/cons of in-person fieldwork? (with a focus on shared experiences)
- Do you think there are any communities for which fieldwork learning experiences pose particular difficulties?
- Have you ever led or facilitated an alternative fieldwork learning experience such as a fieldcast or an alternative fieldtrip? If so what do you think are the benefits or disadvantages?
- Do you think there are ways in which alternative fieldwork learning experiences can promote or mar the development of learning communities?

Appendix 4 - Potential future funding routes

Website	Details
Spencer Foundation (US)	<p>next deadline September 1, \$50,000</p> <p>2 cycles per year - spring and winter</p> <p>up to 5 years</p> <p>The Small Research Grants Program supports education research projects that will contribute to the improvement of education, broadly conceived, with budgets up to \$50,000 for projects ranging from one to five years. We accept applications three times per year.</p> <p>This program is “field-initiated” in that proposal submissions are not in response to a specific request for a particular research topic, discipline, design, method, or location. Our goal for this program is to support rigorous, intellectually ambitious and technically sound research that is relevant to the most pressing questions and compelling opportunities in education</p>
Nuffield Foundation	<p>next deadline September 2021 (two stage process)</p> <p>100% funding eligible costs</p> <p>10-15% funded calls</p> <p>up to £500,000</p> <p>for 3 years (or longer possible but not usual)</p>



PPPA-2021-RemoteDigEdu	<p>deadline 15 July 2021</p> <p>This action aims at developing a strategy designed to increase access to digital education in the EU remote areas and communities that mostly need such support.</p> <p>has a list of universities looking for partners</p> <p>funding for about 2 million euros, one proposal funded</p>
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Leverhulme Research Centres	10 million for 10 years- Leverhulme research centres (maybe too ambitious, but could involve many departments across OU)
Leverhulme research project grants	up to 5 years and £500,000 several deadlines during the year, need to submit outline first, to see if the project will be invited for the full application
Leverhulme research leadership awards	currently closed, not sure when it will reopen again duration between 48 and 60 months



Newton GCRF	Global challenge research fund in education Increasing access to education currently no calls open
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[Innovate UK](#)

UK-registered organisations can apply for a share of up to £25 million for game-changing and commercially viable research and development innovation that can significantly impact the UK economy.

deadline 25 August 2021 or 2022?

[Horizon CL-4](#)

call opening 23 November 2021,

Deadline date 5 April 2022

To develop innovative eXtended Reality applications for learning, training and education

. Grants are worth up to €11.5m each.

Proposals are expected to contribute to the following outcomes: Innovative eXtended Reality industrial and societal applications, integrating technologies such as advanced visualisation, 3D, Augmented and Virtual Reality experiences, human-machine interaction and cooperation, with a focus on well designed and fully tested scenarios in real-world environment.

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Education Endowment Fund

PAUSED ALL FUNDING DUE TO COVID

in the past "The EEF's grant funding tests the impact of high-potential projects aiming to raise the attainment and wider outcomes of 3-18 year-olds, particularly those from disadvantaged backgrounds"

