**Project Title**  
What role does technology play in support of fieldwork in the environmental sciences?

**Key words**  
Environmental Science; Fieldwork; Technology Enhanced Learning

**Supervisory team**  
PI: Dr Sarah Davies, School of Environment, Earth and Ecosystem Sciences, The Open University (Sarah.Davies@open.ac.uk)  
Co-I: Dr Trevor Collins, Knowledge Media Institute, The Open University (Trevor.Collins@open.ac.uk)  
Professor Richard Holliman, School of Environment, Earth and Ecosystem Sciences, The Open University (Richard.Holliman@open.ac.uk)  
Professor Eileen Scanlon, Institute of Educational Technology, The Open University (Eileen.Scanlon@open.ac.uk)

**Is the PhD suitable for part time study?**  
Yes

**Project Highlights:**

- Exploring how environmental scientists perceive and value fieldwork and field learning  
- Investigating how environmental scientists are using technology to support their fieldwork  
- Assessing the role(s) that technology plays in supporting learning about environmental science

**Overview:**

Questions about the value of practical work in the sciences have generated lively debates in recent years (Scanlon et al., 2002). This PhD will contribute to these wider debates by exploring the role that technology plays in shaping and framing fieldwork education in the environmental sciences (e.g. Earth Sciences, Ecology and Physical Geography).

*Figure 1: Ecologists examining lake sediment and collecting data for input directly into a website using a tablet computer. For more details: https://youtu.be/mJjXgahNytM*
Research questions key to this project are as follows:

- Where does fieldwork rank among the core skills and competencies of an environmental scientist?
- Do environmental scientists value knowledge and experience of fieldwork as a core skill for research and as an essential aspect of education at all levels?
- What are the affordances of high-tech versus low-tech fieldwork for teaching and learning in earth and environmental sciences?
- How many of these skills are/could be/should be mediated by technology in the 21st Century, requiring competencies in digital literacy and networked participatory scholarship?

Methodology:

The PhD could take a number of forms. We are interested in research that investigates one or more case studies to explore the deployment of ‘no’-‘low’ (e.g. see Collins et al. 2008) and ‘high-tech’ approaches (e.g. see Argles et al. 2015) to teaching fieldwork in an educational context (e.g. primary, secondary or tertiary level).

The research is likely to be informed by triangulation through mixed methods (e.g. Jensen and Holliman, 2009), and could draw on methodological approaches, such as participatory design or action research.

The successful candidate will draw on a range of methods to collect data, which could include surveys, self-reporting, semi-structured interviews, focus groups and methods of systematic observation (e.g. in laboratory conditions and/or on location in the field).

Training and skills:

You will join a vibrant international community of students studying our MRes and PhD programmes. The Open University (OU) provides excellent support for students and offers a full range of training in educational research methods, as well as computer, library and presentation skills.

Partners and collaboration:

The student will join a well-established team researching technology enhanced learning at the Open University. The multi-disciplinary supervision team is drawn from researchers working in the School of Environment, Earth and Ecosystem Sciences; the Institute of Educational Technology; and the Knowledge Media Institute, with support from the OU’s centre for STEM pedagogy, eSTEeM.

With support from the supervision team you will explore opportunities for collaboration, e.g. with local schools through the Denbigh Teaching School Alliance in Milton Keynes and the Field Studies Council.
The School of Environment, Earth and Ecosystem Sciences has an international reputation for research and innovative distance teaching. We research the past and present for a sustainable future, whilst also supporting research into inclusive and quality environmental education for all, promoting lifelong learning and engagement with environmental science.

The Knowledge Media Institute (KMi) is home to internationally recognised researchers in, among other things, educational multimedia. KMi offers students an intellectually challenging environment with exceptional research and computing facilities. A common characteristic of KMi postgraduate study is that it involves the design, development and testing of technologies to address theoretical and practical concerns in real contexts with real users.

The Institute of Educational Technology is a leading centre for research in Technology Enhanced Learning supporting innovation and enhancing teaching and learning across the University. IET takes a leading role in research that includes mobile learning, open education and massive open online courses, accessibility, assessment and citizen science.

eSTEeM is the OU centre for pedagogy in Science, Technology, Engineering and Mathematics. The OU’s STEM curriculum is at the focus of eSTEeM’s research in learning and teaching. Recent student research projects have explored the challenges of linking students to technology for learning including online practical laboratories.

Possible timeline:

**Year 1:** The main activities will include training, pilot study research and write up for assessment in a probation review.

**Year 2:** You will spend your second year collecting and analysing data for your main study.

**Year 3:** In your final year you will complete your analysis and produce a thesis for examination.

Further reading:


Further details:

Students should have a strong background in educational research or practice, and enthusiasm for environmental science and technology enhanced learning. You will have, or expect, a 2:1 or above in an undergraduate degree or a Master’s degree in education (or equivalent), environmental science, computer science or another appropriate discipline. For direct entry to PhD you will need to have completed postgraduate study that includes appropriate educational and/or social science research methods, such as those listed above (see Methodology).

Please contact Sarah Davies (Sarah.Davies@open.ac.uk) for further information.

Applications must include:

- a cover letter outlining why the project is of interest and how your skills are well suited to the project
- an academic CV containing contact details of three academic references
- and an Open University application form.
- If you are resident in the UK or European Economic Area, please use the form downloadable here: https://tinyurl.com/y73hrfou
- If you are resident elsewhere, please use the form downloadable here: https://tinyurl.com/y836sgq4

Applications should be sent to STEM-EEES-PhD-Student-Recruitment@open.ac.uk by 12pm (noon) on 21st January 2019