

Application ID: TLDF_mini/2019/182

Applicant's details

Applicant's Name: Professor Andrew Wade

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Applicant's Faculty/Directorate: Academic Schools

Applicant's School/Service: School of Archaeology Geography & Environmental Science

Applicant's Department/Unit: Geography & Environmental Science

Project details

Project Title: Learning to interpret and assess complex and incomplete environmental data to develop critical-thinking and confidence

Project Outline: Rocks, soil and vegetation are highly variable across a landscape. This variation makes it difficult for Physical Geography and Environmental Students to interpret and understand measurements of physical, chemical and biological processes made in the field because the measurements are affected by multiple, interacting factors. However, this also brings opportunity to develop critical thinking and employability skills.

In the Hydrological Processes (GV2HY) module, students are given time and space to explore this complexity in a practical class run on the Whiteknights Campus. Two of the learning objectives are: to understand the factors that control water infiltration rates into the soil, and to gain confidence in field-based experimentation. Infiltration rates are measured using simple-to-use Decagon Mini-disc Infiltrimeters along a hill-slope transect together with variables that help explain the difference in the rates: soil texture, soil moisture, position along the hill-slope (top, middle or bottom), slope and vegetation cover. This works well and gives students a dataset which they explore subsequently in class where the measurements are analysed and discussed. However, in some ways the thinking is done for the students as the explanatory factors are pre-determined. Much better would be to allow the students, working in small groups of 5-6, to develop their own hypotheses about the key controls on infiltration and allow them the time to make their own measurements to test these ideas. This would develop student skills in the design and implementation of field-based investigations and critical thinking around environmental data; skills which would enhance progression to dissertation research and employability, given the experience of drawing conclusions with incomplete information and deciding on next steps. The barrier to this hypotheses-driven approach is insufficient infiltrimeters for small-group working in the context of the time available (3 hours) and class size, currently 45 and anticipated to increase to around 60 with the NUIST cohort in 2019.

The School has three infiltrimeters. A further seven would allow the class to be split into 10 groups of 5-6 students allowing the hypotheses-testing approach to be taken. Labcell, the University approved supplier, have quoted £200 + VAT for each infiltrimeter (£1680 total inc. VAT) which includes a discount. These instruments will be used each time the module runs and available for other field-based modules and dissertations (e.g. Research Training for Geographers, Loddon Consultancy).

Success will be evaluated through module feedback, a specific questionnaire to the students about the practical, and comparison of coursework attainment scores, which is based on the practical session, with those of the current cohort. The findings will be disseminated as a short briefing note for the CSTD web-site and presented at a CSTD lunch-time session. This problem-based approach aligns with the focus on field-based learning in the SAGES Teaching and Learning Plan, the University Teaching and Learning Strategy through increased student engagement with academic study and building skills and confidence, and the QAA Geography and Environmental Sciences benchmark skills, especially analysis

and problem-solving through quantitative methods. This proposal is supported by HoD, HoS and SDTL (emails available on request).

Start Date: 01/09/2019

End Date: 13/12/2019

Budget:

Details	Cost
Seven Degacon mini-disk infiltrometers	1680.0000
Total	1,680.00

Previous Funding

Have you been awarded one-off T&L funding in the past? No

If applicable, give previous funding details including year of award:

My Head of School/Service is aware of this application: Yes

My Head of School/Service is supportive of this application: Yes