



Seven day Lanzarote adventure: seven innovations in university learning and teaching

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An annual residential field course in Lanzarote, Canary Islands, gives university students of Environmental Science, Adventure Education, and Primary Science Education diverse opportunities for deep learning that challenges and motivates. Comments from students range from "*the best chemistry lesson ever*" to "*life-changing*". Here I reflect on seven strengths from the student experience:

- (1) Our goal is for students to *learn to ask scientific questions*. Anyone can answer questions, but only the best scientists can ask questions that matter.
- (2) Field work fits the *diverse learning styles* of our diverse students. For example, students model bathymetry using sand and pebbles on a beach; students start to explore social issues around waste disposal on Lanzarote by taking part in a commando raid on a municipal rubbish tip!
- (3) Students *learn from local experts but then learn from each other*. For example, half the group explores agricultural practices while the other half explores traditional uses of plants; a student from one group is then paired with a student from the other group for them to teach each other what they have learned.
- (4) An overview of *current research* on the island (volcanic origins, indigenous species, trace elements in the wines!) comes from students reflecting on abstracts of 25 recent papers from mainstream journals and sharing their understanding with each other.
- (5) We *replicate a real world experience*. One part of the student assessment requires them to write a grant application for a scientific research project using the real-world pro forma and meeting the criteria set out by the real-world funding agency.
- (6) Students work as teams to write these grant applications (as they would do in the real world). They receive a single mark for their work, but the students then divide the mark among themselves according to the quality of the contributions they have made. In this way the university teachers assess the *product*, and the students assess the *processes* within their group.
- (7) Students are encouraged to explore the environmental impacts of their own activities. Affective learning (in which emotions are as important as factual knowledge) is a significant outcome of the course. Students themselves decide to offset carbon emissions from their visit and after returning to UK have created a large apple orchard, a 100 metre hedgerow and a public woodland through their own initiatives. University teachers work subtly (and without the students' knowledge) to promote this learning and environmental action.