10 Making the Most of Fieldwork:

Doing Less to Achieve More!

Fieldwork is often seen as an effective and enjoyable part of the student learning experience, and is considered by many to be an essential component of environmental and natural sciences degree programmes (including biosciences programmes). The QAA Biosciences Benchmark Statement does recognise that biology is essentially a practical subject and that fieldwork is potentially important but it falls short of stating that field-based learning is essential (a mistake in our view) (QAA, 2007). Worryingly, field-based teaching is in decline and there is clearly therefore a need to demonstrate to students and programme managers alike that fieldwork is engaging, effective and efficient.

There is an increasing emphasis on the use of IT to both enhance real-world fieldwork and to enable virtual fieldwork. Two recent articles in Bulletin 26 have discussed the use of IT during fieldwork as one way in which the efficiency and effectiveness of out of classroom learning can be enhanced. In the first of these articles Baggott (2009) explains the use of personal digital assistants (PDAs) by students involved in the collection of data in the field. Using these tools his students were able to collate data rapidly, freeing them to use as much of their time as possible to achieve the learning expected of them. In the second article Cullen et al. (2009) describe the use of tablet laptops to support a Learner Response System as a means by which the knowledge base of a group of students might be assessed quickly while a field exercise is being carried out and to provide students with instant feedback. We sympathise with this situation; when working with a group of students in the field it is often not clear that all members of a group have gained key skills.

We agree that finding ways to increase the effectiveness of time spent in the field and of follow-up time during evening sessions is a key priority in the design of field-based teaching exercises. By taking a back to basics approach, re-thinking the purpose of data collection and better balancing data collation and learning reinforcement, we believe we have found an alternative solution to this problem which does not depend upon field-based IT, and it's potential inhibitory expense but instead uses IT in a more traditional class-room based support session context.

An example of our approach, including an evaluation of its success, can be found in Goulder and Scott (2006), in which we describe how as part of a one week residential field course in western Scotland we enable students (typically a group of 12-15, moving from Level 5 to Level 6) to carry out in one day an intensive field based phytosociology exercise even though they come to the course with little or no prior botanical knowledge. The field-based session takes place on a heather-dominated heath chosen specifically because it is relatively species poor. This focus on a species poor site allows students to become proficient in identification of the members of the target community very quickly. Having identified the plants students are then shown how to record systematically their abundance at a site using pin-frames. Carrying out this process of plant identification and quantification as a group enables students to support one another's learning through the sharing of information.

Having acquired skills in plant recording the students are then presented with a task. They are directed towards two areas of Calluna dominated heathland that are superficially similar and asked to work in small groups to demonstrate they are in fact different to one another in terms of the whole plant community present. One way to achieve this would be to ask each group of students to collect a sufficient data set to complete the task. This would involve each in the collection of many replicated samples and would be repetitive, laborious and inefficient (and probably rushed by some groups). Instead we ask each group to concentrate on quality, asking them as a group to each collect limited data sets (typically scoring plant contacts with 50 pins at each site). In this way the students reinforce their initial learning whilst still in the field.

Much of the evening follow-up session is given over to the students sorting and re-identifying samples of plants sparingly collected in the field. They are encouraged to make annotated sketches of the plants, labelling key identification features, as an *aide-mémoire* to be used during later work on the field course. We consider this process to be a valuable reinforcement of field identifications and an opportunity to practice skills in the use of identification guides and keys. However, because we have deliberately chosen a species poor site, the students also find time during this session to collate their abundance data quickly and efficiently into an Excel spreadsheet (a relatively small table of the 15-20 species times the 8-10 data sets). This matrix is then used by the students as the basis of an ordination analysis which reliably demonstrates to the students the existence of two discrete communities at the two sites sampled.

Our approach is perhaps seen as being a traditional one. However, we believe it is successful because through careful selection of a case study we enable our students quickly to acquire botanical skills in the field and supportive IT skills in the class-room. We do not suggest that IT has no place in the field, but we believe we have found an alternative. By asking the students to do less we suggest that they might in fact achieve more.

References

Baggot, G.K. (2009) Fieldwork: e-learning benefits the part-time student. *Bulletin*, **26**, 3

Cullen, R., Langan, M. and Sen, R. (2009) Using learner response systems for ecological fieldwork. *Bulletin*, **26**, 6-7

Goulder, R. and Scott, G. (2006) Phytosociology for undergraduates with minimal botanical background. *Journal of Biological Education,* **41**, 26-29

QAA (2007) *Honours Degree Benchmark Statement: Biosciences*. Mansfield UK: Quality Assurance Agency for Higher Education

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