The place of fieldwork in geography qualifications

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The place of fieldwork in both geography and science qualifications across the 14-19 age range remains contested, unclear and sometimes under threat. Despite its benefits for student learning and motivation, anecdotal evidence suggest that fieldwork is perceived by some school managers as expendable; desirable but not a core requirement. In this paper we argue that fieldwork needs to have a central place in examinations leading to qualifications in geography. We take evidence from a one-day, invitation-only workshop that cut across geography and the sciences, which we ran at the behest of the Field Studies Council in the Spring of 2014. Although too late to influence policy decisions relating to GCSE and A level content and assessment frameworks, the workshop provided strong endorsement for the renewed prominence of fieldwork in A level examinations – and caution concerning the return to the assessment of field work through examination questions at GCSE level. Nevertheless, fieldwork has become very well articulated in examination specifications, but as always, effective teacher development will be the key to sustaining excellent fieldwork practices.

Key words fieldwork; qualifications; assessment; teacher development

The place of fieldwork in geography qualifications

The place of fieldwork in geography (and science) qualifications across the 14-19 age range remains contested, unclear and at times under threat. This is despite the fact that, as we discuss below, it has long been known that well-conducted fieldwork can make a tremendous difference to the learning and motivation of students, at school level and in higher education (eg Boyle et al 2007; Dunphy and Spellman 2009). Accordingly, the Field Studies Council (FSC) decided to commission the two of us, one a geography educator and one a science educator, both with long-standing commitments to high quality fieldwork, to write a short report on the issue. We organised a one-day, invitation-only workshop. In advance, we sent out large amounts of reading and this was supplemented by a number of those attending the workshop.

The workshop itself comprised a sequence of intensive group discussions and plenary feedback, exploiting the extensive direct experience of teaching and examining provided by the participants and which we summarise and discuss here. Its deliberations were underpinned by a considerable body of research evidence (eg see Rickinson et al 2004) as well as a strong sense of the long established philosophical and practical case for fieldwork expressed in the literature, again both at school and higher education contexts (see for example, Caton 2006; Herrick 2010; Hope 2009; Hovorka and Wolf 2009; Job 1999; Kent and Foskett 2002; Kinder 2013). Some of the workshop was conducted in separate sessions for geography and science, some of it in sessions where representatives of these subjects worked together. In this paper we focus on mainly on geography, but the wider context and perspective provided from science education is certainly useful for a *Geography* readership to bear in mind. Although anchored by our focus on the examinations system in England, we hope that this article and the report on which it is based (Lambert and Reiss, 2014) will also be of value to those working in other jurisdictions.

The case for fieldwork

As one of the workshop participants put it, fieldwork is one distinct component of learning, as "not all science happens in test tubes and young people need to realise this". Duncan Hawley (2012) has added to this realisation: "It is in the nature of laboratory and classroom experiments to separate objects from their environments … But in the 'natural' sciences it is only by putting objects and laws in particular contexts that we can see how they work in terms of empirical effects" (p 88). Thus geographers are not only interested in escaping the confines of the metaphorical test tube, but realise the significance of unique place contexts. This does not mean that places can only be studied as singularities, but the particularities of places can add wonder and fascination (one reason why visits to iconic locations such as the Jurassic Coast of Dorset remain so popular).

It is worth emphasising the point that fieldwork is usually highly rated by students. For example, recent research from Amos and Reiss (2012) reports that out of eleven alternative strategies for learning science, 'going on a science trip or excursion' was rated by students as the most enjoyable way of learning and the fifth most useful and effective. At its best, the evidence shows that geographical fieldwork can raise motivation, reduce anxiety about learning and encourage deeper rather than more surface approaches to learning. It frequently provides memorable experiences and the opportunity to commit to seeing through an enquiry from start to finish, often reliant on working in teams and combining efforts (Dunphy and Spellman, 2009). Anecdotally, school teachers frequently maintain that the softer, social benefits arising from this can last, enhancing learning in geography lessons for weeks afterwards.

In view of these opening remarks it may be considered odd therefore that fieldwork's place remains 'contested, unclear and under threat'. The fact is that geography can be done without venturing into the field: indeed, it is often simpler, and organisationally more straightforward (and cheaper) to avoid the messy, 'naughty' world. Fieldwork can therefore be perceived by some as expendable; desirable but not a core requirement. Fieldwork is sometimes seen by school management as expensive - not only in terms of monetary cost but also of curriculum time (children beong out of school and therefore missing lessons). Some also still argue that the opportunity costs are too high in terms of risk management and 'safety', notwithstanding a plethora of excellent advice and guidance in recent years (eg May and Richardson 2005) and the unambiguous endorsement of fieldwork by government (Council for Learning Outside the

Classroom, 2006) and Ofsted (2008; 2011). And then there are a number of more technical challenges associated with fieldwork in the context of formal qualifications structures such as the GCSE and A level examinations: how do we assess fieldwork? What do we assess and how do we ensure validity and reliability in whatever mechanisms we devise for the assessment of fieldwork?

Some of the issues mentioned in the previous paragraph are daunting and in the general context of the somewhat manufactured anxiety about the efficacy of coursework assessment in the public examination system, there appears to be a reluctance among those with responsibility to ensure standards and 'rigour' in examinations to accept that fieldwork is a significant component of geography qualifications – at least at GCSE level. The participants of the workshop were unanimous in rejecting this view. Even though some experts acknowledged the occurrence of negative backwash arising from a high stakes examination – for example, encouraging 'formulaic' and by implication poor fieldwork experiences in some centres – this is not an acceptable reason for compromising the potential of geography (and science) qualifications to ensure the continuance and development of high quality fieldwork in schools, supported by valid and fit for purpose assessment frameworks.

Before discussing particular technical questions regarding fieldwork and examinations, we therefore refine and extend the principles underlying the case for fieldwork made in the opening paragraphs of this section. The argument we make is that through its unique nature fieldwork offers benefits to students that are of profound importance. Indeed, such is the significance of fieldwork that we argue that it is an essential part of a high quality qualifications structure. It brings conceptual, cognitive, procedural and social gains much of which would be lost without the particular opportunities fieldwork provides (cf. Black *et al*., 2004). Thus:

- Conceptually, fieldwork encourages us to understand that phenomena have a 'history' discernible through traces in the environment. These are often hidden or difficult to perceive but an essential part of understanding change and continuity in settings that have not been pre-mediated (for a textbook, website or even a virtual fieldwork package).
- Cognitively, such fieldwork demands the application of thought processes that are very difficult to recreate in the classroom; for example, using data that may be incomplete

and provisional, synthesising multiple forms of data and being tentative in drawing conclusions.

- Procedurally, it is important for students to witness and be part of geographical enquiry (and interpretive science), where variables cannot be tightly controlled and where arguments need to be weighed.
- Certain social gains derived through fieldwork form highly valuable 'soft' outcomes of school study. We focus here on the social construction of meaning through collaborative enquiries. Done well, fieldwork engages students in the iterative processes of drafting and redrafting data collection instruments (including the identification of good questions to investigate) as well as analysis and drawing conclusions; that is, situations where students learn with and from each other as well as with and from their teachers.

In summary, the workshop discussed the 'compelling case' for fieldwork under four interlocking headings. In revised form these are:

- The use of (and investigation of) 'real world' settings
    - Understanding the uniqueness of place context
    - The motivation of working in unfamiliar settings (this includes 'awe and wonder')
    - Experiencing the 'unfamiliar' in the familiar/local context, and stimulating curiosity
    - Understanding through direct experience and/or observation of the world, linking theory and practice

- Application and evaluation of knowledge, understanding and skills in 'messy contexts'
    - Deepening awareness of variability, data handling and statistical modelling
    - Encouraging caution in explanation, drawing conclusions and decision making
    - Exploring 'ways of seeing' (surface appearances can deceive)
    - Using (potentially) all the senses to explore landscapes/phenomena

- Developing 'real world learning'
    - 'Habits of mind': Investigating; Experimenting; Reasoning; Imagining

    - ‘Frames of mind’: Curiosity; Determination; Resourcefulness; Sociability; Reflection
    - Enabling critical thinking when the world does not behave as the textbook models predict

- Social dimensions
    - Extended social interaction in meaning making
    - Iterative processes (e.g. discussion, redrafting) and independent learning
    - Extended cooperation in problem solving and decision making
    - Deepen teachers’ knowledge of students and their capacities
    - Awareness of ethical questions, e.g. with regard to other living things

We do not argue that fieldwork guarantees these points for, of course, there are no guarantees. Neither is it possible to argue that an absence of fieldwork means that none of the above will happen. What we do say is that fieldwork offers unique circumstances that make the above much more attainable. The learning experience becomes richer, more textured, memorable and even more vocationally applicable. In the words of one participant fieldwork, when done well can be part of “the antidote to boring school”

Fieldwork within geography qualifications

There is a long history of fieldwork in geography qualifications for both 14-16 and 16-19 year-olds. This general statement, of course, covers a great deal of diversity and change over the years. Thus, in years prior to present day regulatory frameworks it was possible to undertake an individual fieldwork investigation at A level that would contribute one-third of the final mark – externally marked with a sample of students even being examined orally (personal experience of Lambert in 1979-82). That was not the norm and is unlikely to be seen again although it is noted that following the introduction of GCSE in 1986 coursework was in some specifications worth up to 40-50% of the final mark. Today it is difficult to gain qualifications in geography at 16 or 19 with no fieldwork component at all although the weighting has been eroded considerably. Indeed, under rising pressure to raise the reliability levels and ‘rigour’ of examinations at 16 years, new GCSEs (from 2016) will be without coursework altogether (or its short lived successor ‘controlled assessment’): fieldwork will be assessed by examination questions.

On the other hand, after a temporary suspension of eight years (2010-17), A-level coursework is to be re-introduced. This was universally welcomed by the workshop. The possibility of requiring candidates to undertake an independent geographical investigation with a fieldwork component, resulting in extended writing in the form of a report is appealing. For example, higher education participants at the workshop commented that few contemporary undergraduates appear to have had much, if any, experience in structuring a coherent and sustained piece of writing on an analytical theme or argument, let alone taking responsibility for identifying questions, data gathering techniques and methods of analysis. There was universal support for a substantial (at least 20%) component of A-level geography examinations being devoted to an independent study requiring a fieldwork component and a report based on rigorous analysis of first-hand data in addition to other sources.

As several workshop participants commented (albeit ahead of the formal announcement on GCSE arrangements), it may be pertinent to distinguish GCSE (e.g. with its far larger candidate numbers and thus far greater organisational challenges) from A level. However, for many, if the educational arguments for coursework can be accepted for A level it is unclear why they do not also apply to GCSE. We sense that this is an argument that is not yet settled. For while few if any geography educators would deny that fieldwork should be an essential component of qualifications at 16 years old, it does not necessarily follow that it should take the form of an 'independent' enquiry as at A Level. The fundamental question is how to make high quality fieldwork experiences mandatory through incorporating fieldwork into the qualification – without imposing formulaic coursework procedures which have been burdensome, open to abuse and, according to unpublished research from Ofqual (the regulating body for the examinations system in England), are not sufficiently discriminating at the top end of the attainment spectrum. We now know that coursework and controlled assessments have now been replaced by fieldwork questions in the formal, timed examination paper. This is, to say the least, an unsatisfactory and probably not a permanent solution, for it is hard to see how it is possible to assess fieldwork outcomes (as listed earlier in this article) with validity in an examination context. In the following section we deliberate more fully on assessment issues such as this.

Assessment

Students' work can be assessed for a number of reasons. For a start, there is the on-going, informal assessment by a teacher (assessment for learning, also known as formative

assessment) that enables the teacher to make fine-tuned adjustments to their teaching depending on the feedback they receive from their students. The role of formative assessment in enhancing the learning process is of particular and special significance in fieldwork, for when done well a close, genuinely iterative relationship can build between teachers and students – and between students – who together see an enquiry through from start to finish. Typically, this will involve much discussion, drafting and redrafting.

Then there is summative assessment where a student's learning (whether for knowledge, understanding or skills) is determined at the end of some unit of work or course of study. Such assessment may be used for a number of purposes, including accountability measures of teachers or schools. Here, we are concerned with summative assessment as determined by Awarding Bodies for the purposes of the grading of students in GCSE and AS/A level qualifications. There is, of course, a tension between the goals and practices of formative assessment and the demands of a national summative assessment framework. The latter places a premium on reliability: that the final grades can be trusted.

There are two main views with regards to the place of fieldwork within formal, summative assessment at GCSE and AS/A level. One is that teachers and students now operate within a system that is so heavily influenced by accountability considerations that if fieldwork isn't a required part of the assessment system, it risks being devalued, with substantially less time and attention paid to it. The other view is that it is not easy to assess fieldwork well at GCSE and AS/A level, in terms of a contribution to the final grade, and that rather than getting bogged down in such assessment validity issues (and the then necessary monitoring processes to ensure reliability), better learning results simply from ensuring that students engage in high quality fieldwork as a core part of their course, without this contributing directly to their final grade.

In the sciences, fieldwork (which is seen as a sub-set of practical work) can be considered central both to the appeal and effectiveness of science education and to the development of practical skills that will be of use in Higher Education and/or the workplace. For example, in the UK, the House of Commons Science and Technology Committee reported back in 2002 that:

> In our view, practical work, including fieldwork, is a vital part of science education. It helps students to develop their understanding of science, appreciate that science is based

> on evidence and acquire hands-on skills that are essential if students are to progress in science.
>
> (House of Commons Science and Technology Committee, 2002, para 40)

Research in the area of practical work (Abrahams and Millar, 2008) shows the significant influence of summative assessment on the practical work that teachers opt to do with their students. Certainly, in England, it has long been recognised with respect to practical work in the sciences (Donnelly *et al*., 1996) that, to a very considerable extent, it is summative assessment that drives what is taught, to the extent that teachers' preferences for using different types of practical work are routinely influenced by their considerations of curriculum targets and methods of summative assessment. Much the same can be said for geography; although it is acknowledged there is less research evidence that this is the case, the majority view of geographers at the workshop was that decoupling fieldwork from summative assessment would be a very risky ploy. If coursework and its successor 'controlled assessment' are no longer viable, then fieldwork questions on the examination are reluctantly accepted as essential.

Whether or not one believes that fieldwork should be summatively assessed in GCSE and/or AS/A level geography qualifications, it remains the case that almost no research has been undertaken on how such assessment might best be undertaken. In geography education literature there is a rich vein of material on approaches and techniques, but formal assessment is in effect left to the regulators and examination bodies In science education Richard Gott and Sandra Duggan have simply concluded that "*there is no easy solution to the assessment problem*" (Gott and Duggan, p 197). In particular, it is difficult to devise instruments that generate marks for practical work that are both valid (i.e. they measure what we want them to measure) and reliable (i.e. different markers give the same / very similar marks to a particular piece of work).

Undertaking quality fieldwork

Student qualifications and their assessment are of great importance. However, they are not the be all and end all as far as student learning goes. Even if we restrict ourselves to student attainment, it is clear that a teacher's pedagogy is at least as important than the intended curriculum or such structural factors as the type of schooling. As Hattie (2011) has shown in his very large-scale meta-analysis, the factors that have the greatest effect on student attainment are in the hands of individual teachers, for example raising student expectations, early

interventions, undertaking formative evaluation and providing opportunities for classroom discussion.

Pedagogic choices are no doubt influenced by the content of students' curricula and the attendant assessment systems but is arguably far more influenced by the training provided in initial teacher education and on-going professional development and by those hard to measure factors aggregated into 'teacher effectiveness'. More generally, Oates (2010) has produced a list of 13 'control factors', by which he means ways of improving student learning, namely (in no particular order): Curriculum content (national curriculum specifications, textbooks, support materials, etc.); Assessment and qualifications; National framework – system shape (e.g. routes, classes of qualifications); Inspection; Pedagogy; Professional development (levels and nature of teacher expertise); Institutional development; Institutional forms and structures (e.g. size of schools, education phases); Allied social measures (such as that which links social care, health care and education); Funding; Governance (autonomy versus direct control); Accountability arrangements; Selection and gatekeeping (e.g. university admissions requirements).

Fieldwork, for reasons we outlined earlier in this article, unquestionably fits into this list - but not if you are unaware of its value and educational benefits. It was noted during the workshop that only a small proportion of new biology teachers (and even fewer in physics and chemistry) have experience of high quality fieldwork, particularly residential fieldwork, in their undergraduate courses than was the case in the past. This is not the case in geography and we should be careful to ensure that this distinctive feature of geography undergraduate studies is maintained. Furthermore, the best PGCE initial training courses still find time for multiple fieldwork experiences, where new geography teachers not only experience learning in the field but begin to organise learning opportunities in the field for others. This is often in the teeth of rising financial and organisational pressures in the fracturing world of initial teacher education (GA 2015) Thus, the long steady march by policy makers to take initial training out of the universities in order to make it more 'on the job' could have serious and unforeseen consequences on the quality of teacher preparation. The possibility that new teachers miss out on coaching on how to instigate, organise and manage high quality fieldwork, either because they happen to be training in a school that does not value this component of geography education or because of its internal priorities the school has not the time to offer this aspect of training, seems an unnecessary risk.

Recommendations, choices and further work

Fieldwork has a valuable role to play in geography in particular but also in all the sciences, especially the case in astronomy, biology, environmental science/studies and geology. In geography and these sciences in particular, qualifications should be designed to ensure that all students experience high quality fieldwork. In most cases this is likely to result from the explicit specification of fieldwork as a requirement for the qualification.

At both GCSE and AS/A level, it is important that fieldwork is subject to high quality assessment. It is often the case that fieldwork is well suited to a more holistic form of assessment than obtains in pen and paper tests: fieldwork cannot adequately be assessed solely through terminal written examinations. Thus, for A Level geography, the independent enquiry resulting in an extended report is agreed to have considerable merit. Some attendees at the workshop were positive about the use of portfolios for assessment purposes at GCSE level as an alternative to examination questions. These can encourage students to develop and record a wide range of skills including investigative skills, reasoned arguments, the marshalling and evaluation of evidence and the ability to write extended prose and have far greater potential for differentiation. Such portfolios, especially if electronic, can also include a diversity of materials (for example, short video clips of peer presentations) and encourage the development of such generic skills as persistence, the ability to work in groups and high quality communication. There would seem to be enough here for a case to be made at least to research the possible costs and benefits of adopting such an approach.

To ensure the more widespread practice of excellent fieldwork in geography will also require vigilance to enhance initial teacher education and subsequent teacher professional development. It takes time to become a teacher who can ensure that students have an outstanding fieldwork experience. However, the rewards are great. Fieldwork can be transformational for students in their understanding of the subject and their attitudes towards it.

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