

It's virtually fieldwork!

Richard Taylor describes the results of a Best Practice Research Studentship (BPRS) project on virtual fieldwork and describes ways in which teachers can make use of such materials with students

The response to the question 'When is fieldwork not fieldwork?' could be 'when it is done in a computer room via the internet!'. Although this is probably not the right answer, the increase in access to and use of the internet in schools has opened up a wealth of material that can be of real use to geography teachers and students. This article first describes research into the use of virtual fieldwork across the eastern region and then goes on to explain how virtual fieldwork websites can be utilised to full advantage to gain useful, up-to-date case study material.

What is 'virtual fieldwork'?

As the whole concept of virtual fieldwork is new there is no universal definition. However, virtual fieldwork can be seen as a representation of a specific geographical area using digital images and/or photographs/video. These may include:

- a number of digital photos of an area with no accompanying notes
- a series of digital photos with some accompanying notes
- a selection of digital photos and/or videos with specific guided tasks.

Moreover, websites not specifically geographical can also be utilised in virtual fieldwork. Tourist information websites for cities, for example, often contain a large amount of appropriate information and images, which will be of use to the geographer.

Why use virtual fieldwork?

There are a number of reasons for using virtual fieldwork with students, these include:

- **Enrichment** – A virtual field trip enables students to visit a site prior to a 'real' field trip. Students should therefore be familiar with the site and can possibly be taught fieldwork techniques before going into the 'field'. This ensures that time out of school is used to maximum effect.
- **Substitution** – Virtual fieldwork may enable students to experience an environment that might otherwise be too difficult or dangerous to visit. For instance, what geography teacher is going to take 30 year 9 students up an active volcano or to a dangerous country or region? It also has an impact for disabled students for whom the facilities may not allow a direct experience fieldwork. Virtual field trips also have ecological implications; sites such as SSSI's and areas of outstanding natural beauty can be 'visited' with no impact on their ecology or environment. What geography teacher would feel 'comfortable' taking 100 students trampling over a world-renowned wetland?

■ **Extension** – Virtual fieldwork will allow students to experience environments that are much more 3-dimensional than the representations in a textbook. For instance, you may be able to look 'around the corner' of an area whereas in a textbook you are confined to the pictures presented on the page.

■ **Interaction** – Virtual fieldwork allows students to alter factors within an environment. It could be possible to remove the vegetation from the landscape and see the soils, and to remove that to see the geology. It may be possible to accelerate time, for instance to observe the changes in coastal landscapes due to weathering and erosion.

■ **Time** – Virtual fieldwork also allows students to make good use of their time. Students can visit many diverse places from the comfort of their own computer room/bedroom. There is no time lost in travelling to and from fieldwork sites.

The advantages and disadvantages to virtual fieldwork are summarised in Figure 1.

How was the research conducted?

The research was carried out as a Best Practice Research Studentship funded by the DfES. Its main goal was 'to investigate the effectiveness of specific virtual fieldwork in terms of raising understanding of geographical areas/issues' (see TeacherNet website for full report). This key question was centred around the original premise that various pieces of geographical research suggest that within geography, students who themselves see a named real-life place have a better understanding of the issues involved in that area. For example, students who can actually visit a specific coastal area and see the coastal defence engineering there will, it is believed, recall much more about the issues involved in the complex

Advantages	Disadvantages
<ul style="list-style-type: none"> ■ No Health and Safety issues ■ No minibus/equipment problems ■ Can be done in limited curriculum time ■ No expense to students/parents ■ The weather! 	<ul style="list-style-type: none"> ■ Confined to specific location ■ May not give an accurate picture of an area ■ Possible technology issues ■ The social aspect is lacking

Figure 1: The advantages and disadvantages of virtual fieldwork.

problem of coastal management. Traditionally, investigations have been carried out on actual fieldwork where a group will go to a specific place and investigate various issues at that location. However, with the advent of the internet as a teaching tool, could the same place be as successfully visited virtually? This sub-question is pertinent with the increasing complexity of the Health and Safety legislations for school visits as well as the time-consuming nature of risk assessments. Thus, virtual fieldwork certainly appears to open up more areas than would be accessible to actually physically carrying out fieldwork first-hand.

The research had two main aims.

1. To see how widespread the use of 'virtual fieldwork' is, and
2. To see how students respond to the use of this 'virtual fieldwork'.

Virtual fieldwork is such a new concept that very little has actually been written about how effective it is as a teaching and learning tool. My question then was – if there is so little literature about virtual fieldwork in general, are geography teachers actually aware of its existence? And, if they are, is anyone using it with students in a classroom situation? In order to discover the extent of the use of virtual fieldwork, I sent out questionnaires via PGCE mentors to schools mainly in the eastern region. These questionnaires were aimed at geography teachers as I wanted to find out if virtual fieldwork was being used and if so how and with which students. Response rates were good with the majority of teachers filling in the questionnaire (see Figure 2).

The second aim of the research was undertaken using 30 students, chosen carefully using three specific criteria:

- They were in year 9
- They had chosen geography as one of their GCSE option choices.
- They represented a mixed ability (i.e. ranging from students who were expected to gain end of key stage 3 level 7 to those who could expect level 4)

Students took part in one day of traditional fieldwork at the coast, which included tasks such as note taking, measuring variables and a decision-making activity. On the second day the students were given a number of pre-selected websites to investigate, with different tasks associated with each site, including well-known activities used in the field, e.g. field sketching, note taking. The websites included a river investigation, a coastal investiga-

Virtual Fieldwork Questionnaire

Completing this questionnaire should take you no more than 3–4 minutes. If you would like more information on the research or wouldn't mind giving more in-depth answers please contact me:

1. Have you used 'virtual fieldwork' with students?
YES – go to question 2 NO – go to question 3
2. If so, which key stage do you mainly use it with? KS3 KS4 KS5
3. If you have not used it, why is this?
 - Don't see the relevance of it
 - Technological constraints
 - Curriculum time constraints
 - Access to computers is difficult at school
4. How did you use the virtual fieldwork site?
 - An 'enquiry' based approach
 - Following a 'walk'
 - Explaining techniques
 - A general 'look and see'
5. How useful did you think the site was for you/your students to 'get a feel' for the place?
 - Very good. It was like being there.
 - Good. It gives an idea of the general place.
 - Okay. It gives some idea of the place.
 - Poor. It gives very little idea of the place.
6. Do you feel 'real' and/or 'virtual' fieldwork increases your students' interest in geography?
 - Real
 - Virtual
 - Both

Reason: _____

7. What part if any do you feel virtual fieldwork (or computer-based simulations) has in the study of geography?

8. If you could design your own 'virtual' fieldwork what would it be?
 - Physical geography
 - Human geography

Please expand on the above

If you have any extra comments/suggestions please feel free to add these here:

Thank you for sparing the time to fill in this questionnaire.

Figure 2: Teacher questionnaire on virtual fieldwork.

tion and a volcano 'walk'. The first two were specifically selected because it would be possible to actually carry out these tasks during 'real' fieldwork. The final website was chosen because it is unlikely that any school trip would visit an active volcano. After completing the tasks related to each website, the students were asked to complete a questionnaire about how they found

the virtual fieldwork. The main factor of interest was how good was the website at giving the students a 'feel' for the place, so questions were focused towards the quality and relevance of the images on the site. Students were asked to rate the images very good, good, OK or poor in terms of their understanding what the place felt like to live/be in.

Which key stage do you use virtual fieldwork with?

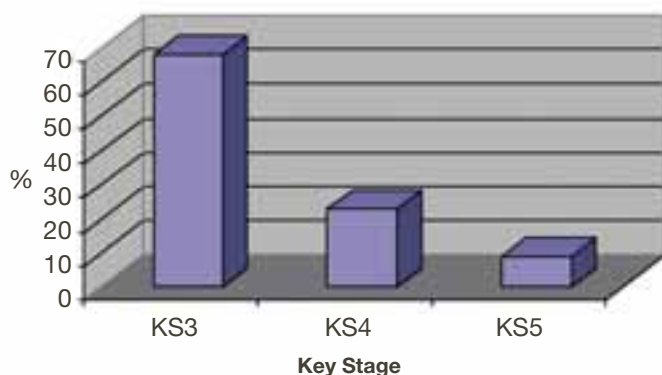


Figure 3: Responses to the question 'Which key stage do you use virtual fieldwork with?' by key stage.

If you have not used 'virtual' fieldwork, why?

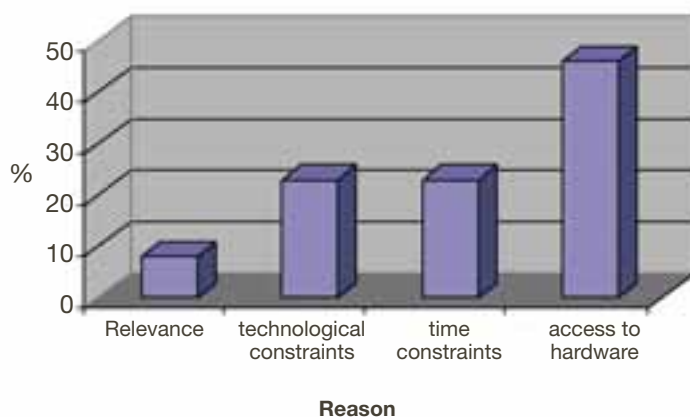


Figure 4: Teacher's responses to the question 'If you have not used 'virtual' fieldwork, why?'

How easy is the website to follow?

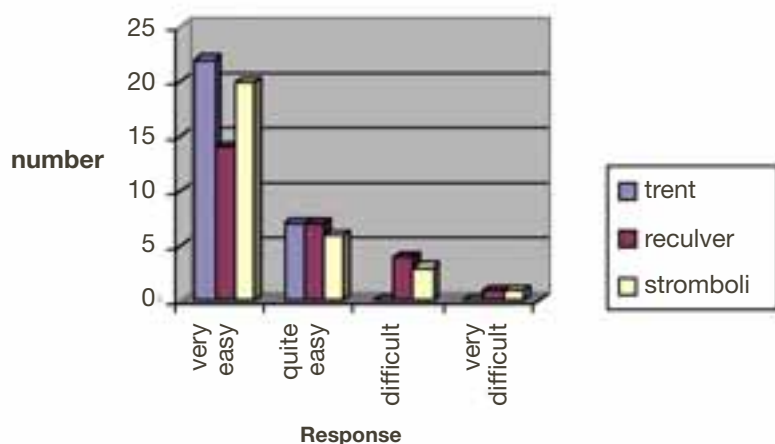


Figure 5: Students' responses to the question 'How easy is the website to follow?'

What did the research discover?

Results of teacher questionnaire

Once all the questionnaires were returned it appeared from the results that only 40% of geography teachers said they had used virtual fieldwork, and the majority who had, had done so with key stage 3 students (Figure 3). The reason given for this was that most teachers felt that within key stage 3 there was perhaps more curriculum time to experiment, without the pressure of finishing examination specifications. It is disappointing to discover that key stage 4 and key stage 5 students possibly miss out due to this perceived or actual lack of time to teach geography at GCSE and A-level.

The reasons teachers gave for not using virtual fieldwork varied from constraints on the curriculum timetable to lack of access to computers at school. This was another disappointing result, especially in cases where geographers are not using the materials available due to lack of hardware (or time to familiarise themselves with this hardware) within schools (Figure 4).

Some interesting comments came out of the questions asking respondents what they would like to see in terms of virtual fieldwork. Most felt that physical geography would benefit most from this new medium of virtual fieldwork. As one colleague put it, 'Physical geography can sometimes be quite "dry" in terms of lessons. It [virtual fieldwork] will allow students to visualise landforms and processes they are unfamiliar with more easily'. Also, as a number of physical geography areas tend to be geographically 'remote', virtual fieldwork 'Has the ability to allow students, especially those in urban areas, access to features such as glaciated valleys or river courses'. Finally one respondent felt a good use of virtual fieldwork was to: 'Allow Norfolk students to experience different physical environments to compare them with the relatively "flat" Norfolk area'.

Results from students

Obviously the ease with which students could access and use the specific websites was of paramount importance. In response to the question 'How easy is the website to follow?' most students rated all three sites 'very easy' (Figure 5). However, this may be because the majority of these (mixed ability) students appeared very confident in terms of accessing and utilising websites in general. This bears out the finding from the day itself when the students appeared to be very confident with websites, allowing the teacher to be much more of a 'facilitator' asking higher order questions as he/she moved around the room.

Most students rated the websites as 'good', indicating strongly that they felt that they were better than textbooks. However, it became clear, as the day progressed, that students felt that using the internet was good but not as good as being in that place or carrying out the fieldwork in 'real' life. Most responses from students to this question fell in to two camps. Firstly it was indicated that being there was best; as one student commented, 'You get the whole picture, the sights, sounds and smells'. As another student commented 'You can actually feel the waves breaking on the sea wall'. Obviously the above cannot be replicated virtually. Secondly a number of students commented on the 'social' aspect of the real life visit – as one female student put it: 'It gives you a chance to work with people you don't normally work with'. Linked with this is the time when students are involved in informal discussions and not necessarily doing the 'set' activities. This allows a broader educational experience.

Students were also asked to rate the usefulness of the activities on the websites (Figure 6). Students were not as keen on websites that merely showed a selection of photographs but scored those virtual fieldwork sites which used a more enquiry-based approach more highly.

Conclusion

The findings suggest that virtual fieldwork is not commonly used by geographers in schools due to a number of issues related to time constraints and hardware. On the student front this type of fieldwork was popular, although not as popular as first-hand fieldwork. There is certainly much scope for extending virtual fieldwork in school, not least for the ability to set it for homework.

Ways forward

Although real fieldwork was still the most popular approach with students who took part in the research the question arises 'Is there a place for virtual fieldwork within the geography curriculum in the twenty-first century?' I would wholeheartedly say 'yes'. However, in order for geography teachers to take advantage of the virtual fieldwork opportunities available to their students, a number of issues need to be addressed. These relate to accessibility of hardware as well as teacher and student use and web design, for example:

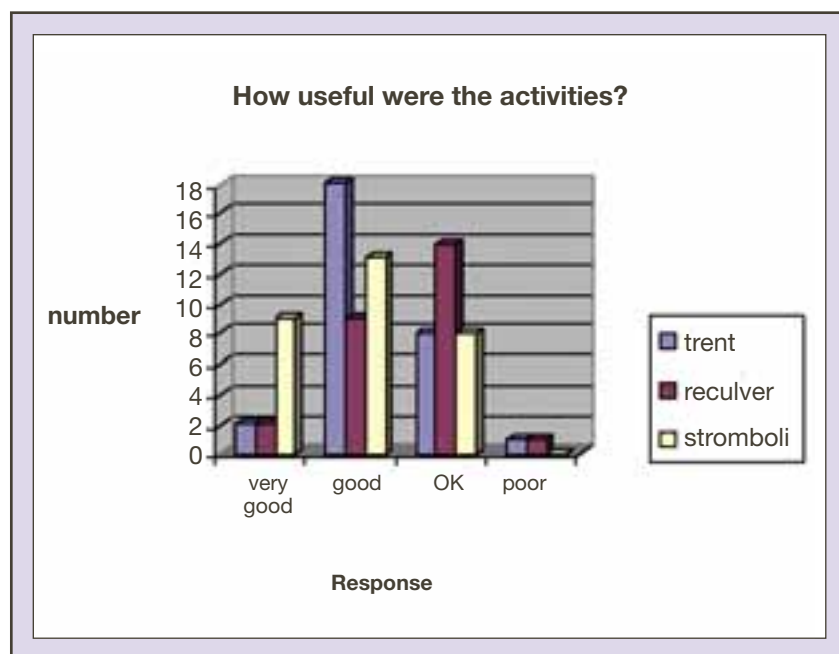


Figure 6: Student responses to the question 'How useful were the activities?'

- Generally, access to computers within schools/geography departments needs to increase for virtual fieldwork to be taken up more widely
- Geography staff need to become more confident with the use of virtual fieldwork sites
- Students need to be encouraged to investigate virtual fieldwork websites on their own to back up classroom learning
- The individuals and organisations involved in constructing these websites need to ensure that their portals are constantly improved, with, the addition of new or improved facilities and materials, for example, the use of real-time video via webcams.

Finally, virtual fieldwork should not be seen as replacing first-hand fieldwork but become part of the delivery of fieldwork within the geography curriculum, allowing students to appreciate local-

ties in various differing ways. I feel as sites get better and virtual fieldwork becomes more prevalent it will become more popular.

And for students...

How to use virtual fieldwork to gain up-to-the-minute case studies

One of the real pluses for this type of information (i.e. gathered via the internet) is that it has the chance to be up-to-date. Outlined below is a suggested way that students could use websites (including virtual fieldwork ones) to gain case studies of areas around the globe. An extremely useful way to sift through the information on the site is to follow the enquiry approach (The 5 W's). Here students can exploit the site by asking themselves a simple set of questions, Where? What? When? Why? and Who?.

Happy surfing! ■

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