



E-Learning in the Geography, Earth, and Environmental Sciences Disciplines: Practitioner Perspectives from the United Kingdom

Derek France , **Stephen Fletcher**

Zitieren dieses Artikels:

France, D., & Fletcher, S. (2007). E-Learning in the Geography, Earth, and Environmental Sciences Disciplines: Practitioner Perspectives from the United Kingdom. *Geographie und ihre Didaktik | Journal of Geography Education*, 35(4), S. 260-271. doi 10.60511/zgd.v35i4.224

Quote this article:

France, D., & Fletcher, S. (2007). E-Learning in the Geography, Earth, and Environmental Sciences Disciplines: Practitioner Perspectives from the United Kingdom. *Geographie und ihre Didaktik | Journal of Geography Education*, 35(4), pp. 260-271. doi 10.60511/zgd.v35i4.224

E-learning in the geography, earth and environmental sciences disciplines: practitioner perspectives from the United Kingdom

Derek France and Stephen Fletcher

Summary

This paper provides an overview of the findings from a national survey of geoscience practitioners based in universities in the UK to establish the current use, re-use and development of e-learning materials. The research was funded and co-ordinated by the Higher Education Academy Subject Centre for Geography, Earth and Environmental Sciences. Motivations to develop e-learning materials in the geoscience community primarily related to improvements in personal and teaching efficiency, but there were numerous barriers impeding the realisation of such benefits. Barriers included limited technical and pedagogic knowledge, a lack of departmental and institutional support, and concern over the time required to develop new materials. The specificity of e-learning resources was also found to mitigate against sharing and re-using materials. If e-learning is to play a serious role in educating future generations of geoscientists, support must continue and be enhanced.

1. Introduction

This paper reports on a UK-wide survey of practitioners in the Geography, Earth and Environmental Sciences (GEES) relating to their experiences of e-learning as a teaching strategy. The paper has two main aims: first, to present a review of the use of e-learning approaches in the GEES disciplines in the UK; and secondly, to establish from practitioners what support would be welcomed to enhance their use of e-learning. The research is specifically focused on the UK and has been facilitated by the GEES Subject Centre¹, which is tasked with supporting and facilitating the development of effective

learning and teaching in the GEES disciplines in the UK.

This research is very timely as universities in the UK are increasingly under pressure to 'do more with less'. In particular, an emphasis on teaching 'smarter' rather than 'harder' has emerged, which has highlighted e-learning, at least potentially, as a more efficient teaching approach. Most, if not all universities in the UK now have online material to support student learning, with many offering degrees, or at least specific elements of degrees entirely online.

In this paper, e-learning refers to a wide range of approaches to information and communications technology (ICT), which support learning and can be defined as "learning

¹ For more information on the work of the GEES Subject Centre visit: www.gees.ac.uk

facilitated and supported through the use of ICT" (JISC, 2004, p.8). 'E-learning tools' can be defined as something used to deliver course content (e.g. email, PowerPoint, video conferencing, online discussion, online assessment, e-portfolios for assessment etc). 'E-learning resources' can be defined as the actual course materials (e.g. reading lists, PowerPoint slides, questions and exercises, web sites, video clips, simulations etc).

The research presented in this paper compliments and supplements our previous research into the use of e-learning in the GEES disciplines. Two surveys in particular provide useful context for this paper. First was a study that examined the relationship between e-learning and fieldwork education (FLETCHER, et. al., 2007). This study involved a postal survey to all GEES departments in the UK and a thematic one-day expert workshop. Key findings included: 1) that e-learning approaches had the effect of increasing the emphasis on students taking responsibility for their own learning (often referred to as students learning to be 'independent learners') and the development of more student-centred learning strategies (particularly problem-based learning); 2) through using e-learning approaches, it was made explicit to students what they were studying and why. It was felt that students also benefited through connections between separate themes of study being more explicit; 3) there was scepticism that the initial investment of time to develop specific teaching materials and

pedagogic approaches would be repaid in efficiency savings later. This was found to be a significant obstacle to the uptake of e-learning approaches; and 4) that a professional development deficit exists for practitioners wishing to adopt or improve e-learning approaches. A similar gap was identified for students, who it is generally assumed have appropriate information and technological literacy to use e-learning methods effectively, but often do not.

The second previous study that compliments the research presented later in this paper is a survey conducted to examine the use of Virtual Learning Environments (VLEs) in the GEES disciplines (France, et al., 2004) VLEs are a web-based online environment that integrates tools for content delivery, communication, assessment, and student management (LITTLEJOHN and HIGGISON (2003) This study sought to provide a snap shot of VLE use and consider the motivations for VLE use, identify the barriers to the use of VLEs and the benefits of their use. The survey incorporated responses from 29 universities in the UK, of which 70% were using VLEs in their teaching of GEES subjects.

The results of the survey suggested that the primary motivation for using VLEs was to modify the student experience in some way. This may have resulted from the desire of the academic to innovate or vary their teaching, encouragement from the university, or through discussion with colleagues. Interestingly,

those academics that already used technology in some way in their teaching appeared more willing to use VLEs than other staff members. As such there were a number of VLE innovators with the technical skill and aptitude who appeared to have used VLEs first. The benefits derived from the use of VLEs were somewhat diverse, with relatively little pattern. Those that did emerge related to incorporating opportunities for reflection into teaching, encouraging deeper engagement with material delivered in the classroom, and demonstrating the value of peer learning and in so doing illustrating that the academic is not the sole source of 'knowledge' within a group. The barriers restricting the use of VLEs again related to time availability to develop materials and pedagogic approaches. There was also a desire for evidence to indicate the effect of VLEs on student learning. It was also noted that material for use on a VLE should be specific and should be tailored to that medium, therefore this might have a significant cost implication.

Overall, it was found that student response to the use of VLEs in teaching was deemed good to very good in 76% of all respondents, but that the actual pedagogic benefit of using VLE in teaching was evaluated by only 34% of practitioners. These results suggested that VLEs may be a useful tool in the GEES disciplines, but the case remains to be made. Notably, institutional support for the development of VLEs was experienced to some degree by all VLE

users in the survey.

The two research projects summarised above are important as they frame the research presented in this paper. The themes that can be drawn from the previous research pertinent to this paper are as follows: 1) academics in the GEES disciplines require evidence that the time spent developing e-learning materials will derive tangible overall time savings and no loss in the quality of student learning; 2) that many academics have little or no experience of using e-learning technologies nor designing pedagogic strategies appropriate to that teaching approach; and 3) that the level of support from universities for the development of e-learning materials was variable and uptake of e-learning approaches was largely dependent upon personal skill and interest of the academic. The research presented in this paper takes these themes and examines what support practitioners in the GEES disciplines in the UK would find beneficial.

2. Context

ICT has been used in education for many years with developments in computer technology creating new frontiers in geography education (NELLIS, 1994) as well as playing a central component of Higher Education subject benchmarks (QAA, 2000). This is evident in many ways including the use of GIS (SUMMERBY-MURRAY, 2001), virtual fieldwork (STAINFIELD et al., 2000) and electronic conferencing (VINCENT, 2000). In recent years many universities have developed online course ma-

materials to support traditional campus-based learning and have developed courses, which are entirely online. E-learning is the fashionable term that has been used to describe this kind of learning. A recent report (OECD, 2005) highlighted four main types of e-learning: 1) web supplemented, in which classroom-based courses are supported with online materials; 2) web dependent, in which courses have required online activities, such as collaborative work, assessment or projects; 3) mixed-mode or blended learning, in which online learning replaces significant proportions of classroom learning, but campus attendance is still required; and 4) fully online, in which attendance on campus is not necessary and students follow an online curriculum.

At UK level there have been a number of initiatives within the higher education sector to promote e-learning as a means to empower and engage learners. One such strategy document *Harnessing technology transforming learning and children's services*, commented that "a greater focus on technology will produce real benefits for all" (Department for Education and Skills, 2005, p.2). Higher Education Funding Council for England, HEFCE (2005, p.6) state that, "focus should be on student learning rather than on developments in technology *per se*, enabling students to learn through, and be supported by, technology." Furthermore, the current generation of students entering University comes with some tech-

nological gadgetry and form part of the modern day 'net generation' (OBLINGER and OBLINGER, 2005). They bring with them a wealth of online experiences and skills, which need to be utilized by today's practitioners and incorporated into student learning activities.

It seems therefore that the trend towards e-learning and national level e-learning initiatives in the UK combined with increasingly technology-aware students is creating new set of expectations for both staff and students to incorporate technology into their practice – be it as teacher or learner. The research presented in this paper explores these issues from a geoscience practitioner perspective within UK universities.

3. Method

The primary source of the data presented in this paper was a questionnaire survey distributed to GEES academics in the UK. The survey consisted of 12 open questions and three closed questions. The questions were structured around the following themes:

- The rationale for, and type of e-learning approaches used by practitioners;
- The challenges of using e-learning experienced;
- The support offered to practitioners for using e-learning in their teaching at various levels within their university;
- The opportunities for, and willingness to share e-learning materials with other practitioners;

- The role that could be played by the GEES subject centre in supporting e-learning practice.

The survey was distributed by email to members of the GEES Subject Centre mailing list. The list included individual academics that have had contact with the Subject Centre in any way, as well as representatives in GEES-relevant department in almost all universities in the UK. The total number of recipients of the survey was estimated as 150 Practitioners with an existing involvement with e-learning, potentially only a small proportion of the entire recipient base, were specifically encouraged to respond to the survey. A total of 44 responses were received (29% response rate) which was above initial targets and expectations. The respondent profile was not biased towards any particular type of university and incorporated lecturing staff of varying seniority (92%), some of whom held specialist e-learning co-ordination (13%) or distance learning roles (5%). A limited number of support staff also responded to the survey (3%).

The data was analysed both quantitatively and qualitatively. In this paper, emphasis will be placed on the quantitative evidence, but this will be supported by relevant extracts from survey responses to demonstrate the meaning and specific emphases placed on certain answers. All direct quotes from respondents have been anonymised in order to maintain assurances of confidentiality.

4. E-learning survey results

4.1 The rationale for, and type of e-learning approaches used by practitioners

The rationale for using e-learning could be clearly grouped into benefits for teachers and, separately, benefits for students. Benefits for teachers were largely pragmatic rather than pedagogic. Benefits related to accommodating increased student numbers, being able to deal with problems quickly through mass communications (*"for communicating with large numbers of students it is the ONLY way"* [original capitalisation]), being 'available' to students regardless of location (of either party), and through providing reductions to workload through avoiding frequently asked questions and the provision of automated feedback within online assessment. The enhanced communication capacity was perceived as important as *"students like it, especially when they can get a more personal (if online) response, rather than in a class discussion"*. The use of e-learning was also considered to be a response to the realities of modern higher education and a more diverse student population. In this context, e-learning can *"maximise opportunities for offering teaching support to students who may be dispersed in time and place. It increases flexible delivery of teaching and learning, increases opportunities for collaborative working and groupwork, and widens accessibility"*. It also *"gives flexibility and immediacy"*. From a pedagogic perspective it was commented that

feedback from online exercises prior to a classroom session could inform the content and approach of the face-to-face teaching.

A secondary rationale for the adoption of e-learning techniques related to the preferences and interests of the academics involved. Many respondents demonstrated an interest in technology generally, which produced a willingness to apply it to teaching. The following quotes give an indication of typical comments: "I like using technology", "I am interested in IT" and "I enjoy experimenting with the facilities available". Another respondent reported using e-learning approaches "because they are there". These comments were generally given after the pragmatic reasons, perhaps suggesting these respondents, because of their prior interest in technology, preferentially tended to see e-learning solutions to their practical problems, rather than more conventional alternatives.

There was a general acknowledgement amongst respondents that e-learning is "increasingly what learners expect to feature within their learning experience and resonates with their growing use of electronic media for interaction and communication". Other respondents put this more bluntly, suggesting that e-learning is what "students demand... indeed expect" in their courses. Benefits to students were much more pedagogic in their emphasis as the following quote illustrates:

"Without exception [e-learning

packages] offer a committed teacher tools that are better suited to teaching and learning than chalk and talk. Indeed, I will go so far as to argue that web-delivery, with tutor support done properly, is in many senses better than face to face [teaching]. Mostly this arises because the tools permit students to learn at their own pace and in a style that suits them (or at least with additional options). Even 'lecture notes on the web', an idea subjected to scorn by dedicated e-learning specialists are in my view a massive advance for many (for example those with dyslexia or non-native language speakers)".

It was considered that the use of e-learning approaches facilitated active participation in lectures through reductions in pressure from note-taking and through confidence derived from formative exercises prior to the classroom session. It was also thought that the use of e-learning accommodated different learning styles, helped to develop time management skills, gives students employability skills (it forces students to engage with technology), provides self directed learning opportunities – access to materials anywhere at any time, and is inclusive of disabilities and language barriers (through capacity to change fonts, colours, etc). It was also noted however, that some students choose not to participate which creates significant difficulties, as there is often

little support outside that which is offered through the e-learning approach.

It was found that communication elements of e-learning were most commonly used by respondents, with the simplest to manage e-learning tools used most and the more complicated tools, used least. The results indicated that email was used as a teaching tool by 98% of respondents, presentation software by 93%, online discussion by 53%, and online assessment by 43%. Other forms of e-learning used, most commonly within the context of a VLE, included: bulletin boards, e-portfolios, video conferencing, and the online submission of assessments.

4.2 The challenges of using e-learning

The main challenge to using e-learning approaches, cited by over 50% of respondents, was the investment of time required to make the transition to e-learning approaches. The specific aspects of adopting e-learning approaches that demanded greater time commitment included time to learn to use new software, time to develop new materials, and the time to design appropriate pedagogic strategies. There was some scepticism over the actual time savings involved through using e-learning approaches, as one respondent commented, *"I sometimes think that the time that is supposedly 'saved' by using e-learning is artificial/illusory"*. Several respondents commented that they received little

or no recognition of the additional time requirement in their workload planning from their employing institution. Many respondents also commented that they felt constrained by their own *"technical limitations" and skills, and were concerned that if they were to adopt e-learning approaches, they wanted to "do it properly" to "ensure that e-learning adds value to the learning experience"*.

Challenges also related to student attitude to e-learning. There were concerns related to student demotivation through reduced personal contact, the potential for non-participation in the learning process, and that student may adopt a *"passive entertain me mentality"*. It was also acknowledged that some students were *"technophobes"* or had *"techno-fear"* and would not engage with e-learning approaches. There was concern that *"students are often reluctant to use methods which are other than 'sage on stage' variety. Although there are many aspects of e-learning which help support learning and facilitate independent learning, there is a reluctance to try them"*. The increased opportunities for communication however were described as *"sometimes difficult to control as expectations increase"*. More pragmatically, there were concerns related to the ownership of the content of e-learning approaches, copyright issues over material used in e-learning and the re-use of material elsewhere, and compatibility issues between different hardware and software.

4.3 The support offered to e-learning practitioners

The main source of formal support for e-learning cited by respondents was within their own university (88%). The forms of support included help desks, developmental workshops, learning support to assist with the pedagogic elements of e-learning, and dedicated academic and support staff to facilitate the uptake of e-learning approaches. Many respondents praised the work of their institutional support mechanisms. However, a comment by one respondent highlighted potential difficulties with the level of the support, *"institutionally, my university is quite good in terms of support. But this is still only enough to get many people started... Support staff would need to be increased significantly in order to increase the number of people regularly using and creating 'higher order' e-learning materials for their teaching"*.

Support from within their academic department was cited by 33% of respondents. This included peer support, e-learning and teaching support groups, departmental computing officers/technicians, and departmental learning support officers. However, in practice, this support tended to be informal and it was apparent that most academics were 'self-taught' and that early adopters of e-learning approaches were then asked to run workshops for others. Some departments had nominated individuals to champion e-learning, although this was unusual amongst the respondents of this survey.

The GEES Subject Centre was cited by 28% of respondents as providing some kind of support, although this tended to be through published articles, workshops and conferences, rather than practical support or training. Overall there was more structured support at institutional level. However a significant increase in departmental and institutional e-learning dedicated support staff appeared to be needed.

4.4 Opportunities for sharing e-learning resources

The electronic format of e-learning resources makes those resources convenient to share and adapt for re-use. Respondents felt that this would be particularly useful given the concerns over the time commitment required to create new e-learning materials, indeed, one respondent commented that *"this is a vital step if e-learning is to realize its potential but it is not a trivial one"*; it was further commented that *"the development of re-usable learning objects is vital if e-learning is to be useful and efficient"*. Scope for sharing materials *"both within and between institutions"* and *"developing materials collaboratively"* was considered as *"entirely possible"* and widely recognised amongst respondents. This was particularly focused on presentations, reading lists, questions and answers, weblinks, and images. In particular, it was considered that first year generic material was most suitable for sharing (such as study and transferable skills material), but that as the focus of study became more

specialist and specific to individual academics (normally later in degree courses), opportunities for sharing and adaptation reduced. However, within institutions, the specificity of teaching created a barrier to sharing e-resources as *"no-one else is teaching what I teach"*. Likewise, the *"personalisation"* of learning materials was identified as potentially problematic as was compatibility in both technical and pedagogic terms. This was likened to generic problems with the transferability of teaching materials as *"the same problems apply as with paper-based learning resources. No textbook (or e-learning resource) ever quite captures the slant a particular lecturer wants to present"*. It was also acknowledged that most shared e-learning material would need to be adapted prior to its use in an alternative context.

The simplest opportunity for sharing within institutions was amongst immediate colleague networks, which could be facilitated by 'open spaces' within institutional VLEs where material to be swapped could be placed. It was felt by respondents that in order to encourage inter-university sharing of resources, a central store of resources was required. This would also address a concern raised by respondents related to knowing what was available. An issue of equity was raised by a number of respondents, particularly as *"there would be a reluctance to contribute such resources if it was felt that others were reaping the benefits without necessarily contributing themselves"*.

Respondents were asked to consider how effective sharing and re-use of e-learning materials could be encouraged. A central resource base was a strong theme identified by 43% of respondents, which would both develop new material and facilitate the organisation of shared materials. This central base would need to: manage copyright and ownership issues (a concern for 13% of respondents); acknowledge and reward resource developers (a concern for 14% of respondents); and provide a searchable database of materials available (cited by 28% of respondents). More broadly, it was also noted that there may be scope to ascertain the actual (as opposed to perceived) benefits of e-learning and promote successful practice in e-learning through staff development events. The GEES Subject Centre was cited as an obvious potential provider of these resources.

4.5 The potential role of the GEES Subject Centre in supporting e-learning practice

Support from the GEES Subject Centre to develop and use e-learning teaching strategies was generally welcomed by respondents. Meeting with other practitioners to discuss and exchange ideas was the primary source of support cited as potentially useful by respondents (53%). Typical comments from respondents included: *"opportunities to meet with other practitioners - perhaps themed workshops on particular uses/e-learning systems"* and *"I have learnt much more when*

I have had the opportunity to engage/meet with other practitioners and share experiences". Short practice guides were identified by 35% of respondents as potentially useful, case studies of how e-learning approaches could be used were identified by 28% of respondents, and 23% identified short training events as potentially useful, although practical constraints often limited the potential to attend these events for many respondents. Other support methods cited included: a journal of good practice (on-line); an on-line discussion forum; a searchable online nugget bank (a collection of good ideas); developing guidance to institutional IT and library staff about the issues of re-use and sharing; and through linking with other resource banks in cognate disciplines, including chemistry and civil engineering.

The specific e-learning services that respondents considered the GEES Subject Centre well placed to provide included an image/video/animation bank (70%), a shared learning resource repository (55%), and a question bank (48%). There was consensus that *"a good starting point would be lots of good quality shared images"* and that centralisation may help alleviate some of the copyright issue concerns. However, it was commented that any resource bank *"must be easy to search [and be] time efficient"*; the host must be able to *"guarantee of the quality of the deposited material"*; and the security of the resources must be considered *"especially question*

banks [in order] to prevent student access". It is interesting to consider the extent to which existing search engines are providing this service already, albeit without access to material stored within university systems.

In terms of committing resources of the GEES subject centre, respondents were asked if they felt this would be an effective use of resources. Although the most common response was positive (38%) there was considerable uncertainty, with 13% answering 'no', 28% 'not sure' and a further 13% not providing an answer. The detailed answers of respondents reveal that *"raw materials"* such as video clips, images, animations, etc. would be welcomed, but that many respondents considered that environmental materials became outdated very quickly and that in most instances it would be *"better to start from scratch"*. This was particularly the case when the limitations of original software frameworks were taken into account, as the benefit may not warrant the resource allocation.

5. Conclusion: implications for the geosciences community

In order to consider the implications of this research for the geoscience community fully, the conclusions of the survey presented in this paper are incorporated into, and combined with, the conclusions arising from the previous surveys on e-learning use in the GEES disciplines in the UK undertaken by the authors. The synthesis of conclusions suggests

three main implications for the geoscience community.

First, it would appear that at present, it is technological innovation that is driving the use of e-learning rather than a pedagogic rationale. This is a concern as, in the view of the authors and most of the relevant literature, e-learning is a distinctive teaching approach with its own pedagogy (e.g. JISC, 2004). The specific pedagogic conditions and constraints of this approach need to be considered carefully before the adoption of an e-learning strategy and evidence from the research presented here suggests that this is not the case. The implication for the geoscience community is that the pedagogic considerations of e-learning require greater attention. This research has shown that a national body (in this case the GEES Subject Centre) would be well placed to deliver such support.

Second, there are significant barriers to the uptake of e-learning both for staff and students. In terms of staff barriers, time to produce or adapt materials is a key constraint. Many staff are concerned that they lack the skills and knowledge to develop appropriate learning materials, both in a technical sense, and that are pedagogically suited to delivering an effective e-learning approach. The implications for the geoscience community are reasonably clear. There is a need to investigate opportunities to share and re-use e-learning resources in order to facilitate their uptake in pedagogically

appropriate ways. Student barriers (as perceived by academic staff) relate to the potential de-motivating effect of the transition to e-learning and the potential lack of skills of students to effectively participate in an e-learning process. Little research exists in relation to student attitude to e-learning in the geoscience disciplines at present, but this requires further investigation in order to ascertain the validity of this concern.

Third, is the encouraging observation that support for e-learning within geoscience community is emerging at a variety of levels, including within specific academic groupings within universities, at institutional level, and nationally through the work of organisations such as the GEES Subject Centre in the UK. If e-learning is to play a serious role in educating future generations of geoscientists, then this support must continue and be enhanced.

Acknowledgements

This research was funded and supported by the Higher Education Academy Subject Centre for Geography, Earth and Environmental Sciences the UK. The authors would also like to thank all of the geoscience practitioners that participated in the research

References

Department for Education and Skills (2005): *Harnessing technology transforming learning and children's services* Available online

- at <http://www.dfes.gov.uk/publications/e-strategy/> (accessed 2nd March 2007).
- FLETCHER, S., FRANCE, D., MOORE, K., & ROBINSON, G. (2007): Practitioner Perspectives on the use of technology in fieldwork teaching *Journal of Geography in Higher Education* 31(2), pp. 319-330
- FRANCE, D., FLETCHER, S., MOORE, K., & ROBINSON, G. (2004): **Contrasting Perspectives of Virtual learning Environments: A GEES Practitioner' Survey.** International Geographical Congress, Glasgow
- Higher Education Funding Council for England (2005): *E-learning strategy*, Higher Education Funding Council for England, JISC & HEA Available online at www.hefce.ac.uk/pubs/hefce/2005/05_12/ accessed 2nd March 2007.
- JISC (2004): *Effective Practice with E-Learning: A good practice guide in designing for learning.* Higher Education Funding Council for England
- LITTLEJOHN, A., & HIGGISON, C. (2003): *A Guide for Teachers.* E-learning Series No 3. LTSN Generic Centre
- OECD (2005): *E-Learning in tertiary education: Where do we stand?* Organisation for Economic Cooperation and Development, Paris.
- OBLINGER, D. G, and OBLINGER, J. L. (2005): *Educating the Net Generation.* Educause. Available at <http://www.educause.edu/educatingthenetgen/> accessed 2nd March 2007.
- NELLIS, M.D. (1994): *Technology in geography education: Reflections and future directions.* *Journal of Geography* 9: 37-39.
- QAA (2000): *Geography Subject Benchmark Statements* (Gloucester, QAA).
- STAINFIELD, J., FISHER, P., FORD, B. & SOLEM, M. (2000): *International virtual field trips: a new direction?* *Journal of Geography in Higher Education*, 24(2), pp. 255-262.
- SUMMERBY-MURRAY, R. (2001): *Analysing heritage landscapes with historical GIS: contributions from problem-based inquiry and constructivist pedagogy,* *Journal of Geography in Higher Education*, 25(1), pp. 37-52.
- VINCENT, P. (2000): *Computer-mediated communication in undergraduate teaching: web-based conferencing with Lotus Notes/Domino,* *Journal of Geography in Higher Education*, 24(3), pp. 381-394.

Authors:

Dr. Derek France
 Department of Geography and Development Studies
 University of Chester
 United Kingdom
 Email: d.france@chester.ac.uk

Dr. Stephen Fletcher
 School of Conservation Sciences
 Bournemouth University
 United Kingdom
 Email:
sfletcher@bournemouth.ac.uk