

Theory INTO Practice



WebQuests in Geography

TONY FISHER

PROFESSIONAL DEVELOPMENT
FOR GEOGRAPHY TEACHERS
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**Geographical
Association**



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Introduction

What I seek to do in this book is to explore some aspects of the zone of overlap between geography and information and communications technology (ICT). I want to focus on the use of computers to support teaching and learning in geography. In particular I intend to explore the following questions:

- What do we need to know about learning?
- Why should we use ICT in geography teaching?
- How can the use of ICT support learning in geography?

Together, geography and ICT provide a great opportunity for worthwhile learning activities, both in and out of the classroom environment. I will focus on one particularly flexible type of learning activity – the WebQuest – to explore this notion.

The use of ICT in geography may conjure an image of individual learners beavering away at individual computer work stations. But of greater interest in this book is the way in which ICT in geography may be used to support collaborative activity among learners. Learners working together can support one another's learning, and may also achieve together what they could not achieve individually. WebQuests involve collaborative working among groups of learners.

There is also an opportunity for the profession to learn more about the use of ICT in geography teaching, and indeed about learning in geography itself, by trying things out and by engaging in discussion about the results – in short, by learning together. I hope that this book will contribute to that process.

I believe it is important to 'raise the profile' of theory in day-to-day educational practice by clarifying the theoretical basis of what we do. Only in this way can we establish a clear and robust rationale for our actions, and a shared language to describe it to others, both within and beyond the community of geography teachers. The discussion of learning theory in Chapter 2 (pages 12-17) reflects that belief.

Chapter 3 considers the results of some of the research into aspects of ICT and education, and Chapter 4 examines the use of ICT to support teaching and learning in geography, with a particular focus on the enquiry approach and the use of WebQuests. Readers are advised to make use of the online WebQuest about WebQuests which accompanies Chapter 4. Chapter 5 raises the possibility of geography teachers becoming researchers into the use of ICT in geography.



4: ICT and enquiry in geography

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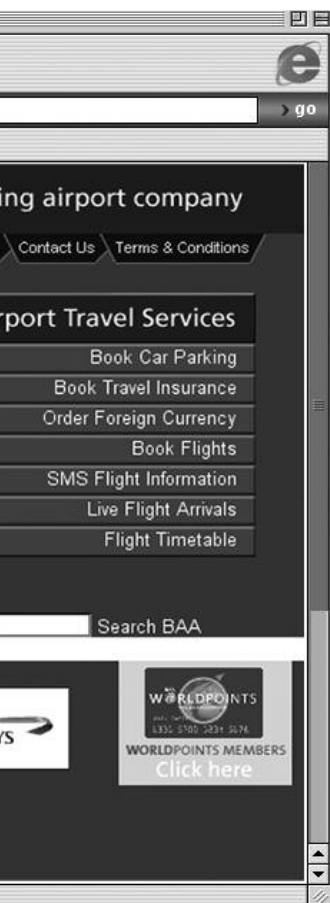
'Perhaps the greatest of all pedagogical fallacies is the notion that a person learns only the thing he [sic] is studying at the time' (Dewey, 1963, p. 48).

This chapter looks briefly at the nature and role of enquiry in geography education and examines the WebQuest approach as one way of using ICT to support an enquiry approach to the subject. I will then invite you to experience online an adaptation of the WebQuest idea for yourself in a 'WebQuest about WebQuests' especially written to accompany this book.

Enquiry in geography

In the early to mid-1990s four subjects were identified as holding particular promise for the development of the use of ICT. One was geography. The Geography and IT Support Project brought together the Geographical Association (GA) and the then National Council for Educational Technology (NCET, now the British Educational Communications and Technology Agency - BECTA). The project, funded by the Education Department, set out to investigate the potential for using I(C)T in geography. The project confirmed the particularly strong potential of the relationship between geography and ICT, and one of the project outcomes was the leaflet *Geography - A Pupil's Entitlement to IT* (GA/NCET, 1994). The GA/NCET leaflet proposed that students studying geography are entitled to use ICT to:

- enhance their skills of geographical enquiry;
- gain access to a wide range of geographical knowledge and information sources;
- deepen their understanding of environmental and spatial relationships;
- experience alternative images of people, place and environment; and
- consider the wider impact of IT on people, place and environment.





The geography national curriculum identifies four key elements of knowledge, skills and understanding running through the subject. They are:

- Geographical enquiry and skills.
- Knowledge and understanding of places.
- Knowledge and understanding of patterns and process.
- Knowledge and understanding of environmental change and sustainable development

(See, for example, programme of study for geography, DfEE/QCA, 1999, pp. 16-23).

These key elements aim to address or support the underlying rationale for the subject. They are built into the programme of study and also woven through the level descriptions of the attainment target. ICT can play a part in all of these key elements; here I want to focus on enquiry.

Let me say at the outset that enquiry is not an unproblematic aspect of geography. As pointed out by Davidson and Catling (2000, pp. 271-2), the recent emphasis on curriculum 'delivery' has not been helpful. An enquiry approach to the subject is experienced through active participation, rather than being 'delivered'. Indeed, in the light of the earlier discussion of learning theory, the metaphor of curriculum 'delivery' is suggestive of a transmission-oriented view of the curriculum. Active participation in enquiry, however, is more characteristic of constructivist approaches. However, it is also clear from inspection and research that 'enquiry' is differently interpreted among geography teachers. In order to support the development of enquiry in the subject a discussion document was published (QCA, 1998).

The programme of study for geography states that:

'During key stage 3 pupils investigate a wide range of people, places and environments at different scales around the world. They learn about geographical patterns and processes and how political, economic, social and environmental factors affect contemporary geographical issues. They also learn about how places and environments are interdependent. They carry out geographical enquiry inside and outside the classroom. In doing this they identify geographical questions, collect and analyse written and statistical evidence, and develop their own opinions. They use a wide range of geographical skills and resources such as maps, satellite images and ICT' (DfEE/QCA, 1999, p. 22).

The case for an investigative, enquiry approach to learning in geography does not of course rest there. If we are constructivist teachers, enquiry presents our students with appropriate opportunities to develop their knowledge about the issue in question, and also about themselves as learners through metacognition (awareness and 'executive control' of one's own thinking processes and strategies). Metacognition is a somewhat slippery concept, but is also something of a 'holy grail' in the teaching of thinking skills. Approaches to supporting metacognition in geography have been investigated by the Thinking Through Geography Group (Leat, 1998; Leat and Nichols, 1999; Nichols with



Kinniment, 2001). Metacognition is an important link between enquiry processes and the development of effective thinking skills. Activities, including geographical enquiries, may be structured in such a way as to encourage metacognition in action, for instance in making a reasoned choice of approach. Sometimes teacher intervention is also needed, for instance in debriefing an activity so as to encourage reflective metacognition.

The enquiry process can take many forms, but all of these correspond to a greater or lesser degree to an underlying model, represented diagrammatically in Figure 4. However, it is important to stress that around this underlying model there can be considerable variation, for instance in the amount of scaffolding provided by the teacher. The next section focuses on the 'WebQuest' as an example of a scaffolded enquiry.

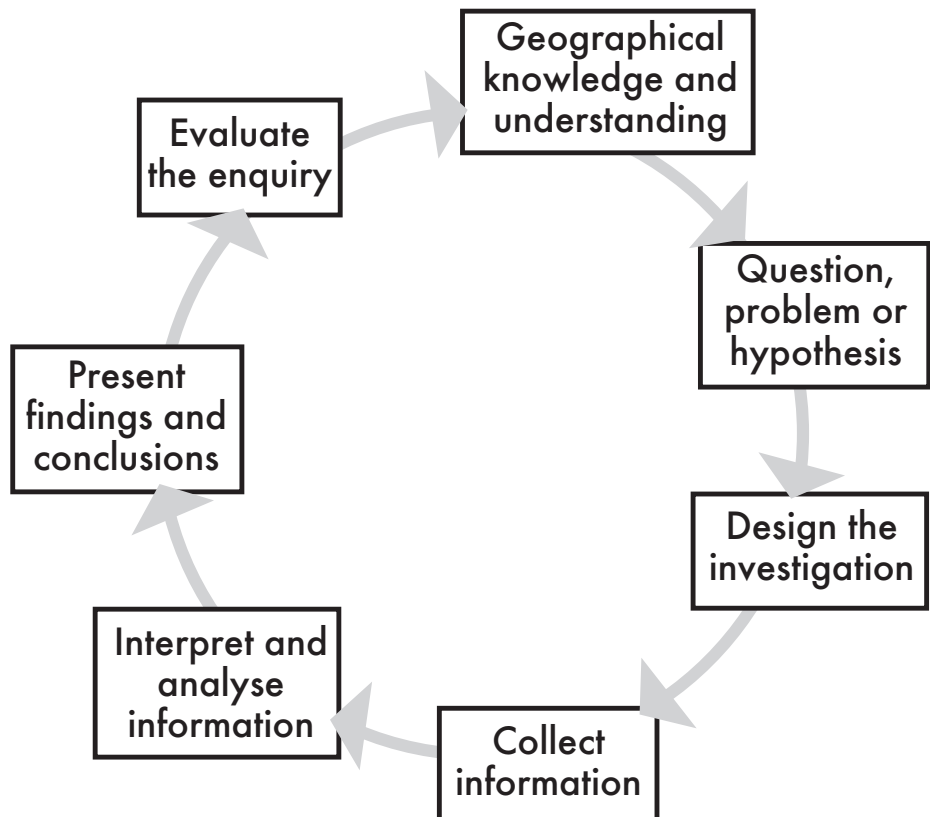


Figure 4: One version of the enquiry process in geography



WebQuests and geographical enquiry

Most geography teachers are familiar with the idea of a group project, through which their students are expected to find out about the topic in question. At their best, such group projects can be vibrant, enjoyable learning experiences, drawing on a variety of sources and encouraging genuine co-operation and collaboration among learners in social processes of knowledge construction. This does not usually happen by accident. Successful group project work in geography (and in any other subject) is the result of careful planning and preparation by the teacher. The WebQuest approach provides a structure for such group project work in 'the information age'.

As befits the concept of the WebQuest, there is a limit to what one can, or would wish to, say about it in a book. Surely the better thing is to develop an understanding through the web itself. Though WebQuests are normally set up as group activities, I have developed a short WebQuest to accompany this book which will introduce the individual reader to the approach. Of course you could tackle this introductory WebQuest with a friend or colleague. Find the WebQuest at www.nottingham.ac.uk/education/WebQuest, but do not feel that you have to stop reading if you have no computer with access to the world wide web immediately to hand! I assume that some readers will wish to continue with the text, but if you do, try to find an opportunity to look at the online WebQuest at another time.

'A WebQuest is an enquiry-oriented activity in which most or all of the information used by learners is drawn from the Web. WebQuests are designed to use learners' time well, to focus on using information rather than looking for it, and to support learners' thinking at the levels of analysis, synthesis and evaluation' (Dodge, 1995).

WebQuests are rooted in a social-constructivist view of knowledge, not least because they are conceived as group assignments. This is because 'learning, both outside and inside school, advances through collaborative social interaction and the social construction of knowledge [and] it is only within groups that social interaction and conversation can take place' (Brown *et al.*, 1989).

WebQuests are based on a 'do-able', engaging task for groups of learners. A WebQuest has an enquiry or investigative orientation, and a clear structure designed by the teacher. It contains explicit guidance and is the antithesis of the 'go surfing the net and see what turns up' approach. The structure of a WebQuest is outlined in Figure 5 (this example is in outline form only).



WebQuest component	Detail of component	Outline example (Only main points are listed. A WebQuest would address students directly and give greater detail.)
Introduction	This is usually a short statement giving some background. It sets the context for the WebQuest task.	<i>A paragraph explaining the National Forest and a proposal for extending it.</i>
Task	The task is 'do-able and interesting' and is most likely to be a group task; it should be designed so as to be motivating in order to gain interest and involvement, and will reflect a real-world activity or situation. If learners take on roles, their activities should be authentic and thus reflect as far as possible what would be done 'in real life'. There should be a need for interdependence among group members – they can achieve the task together but not alone.	<i>As teams of environmental consultants, to recommend with reasons an area into which the National Forest should be extended, and the purposes this extension of the Forest will be used for. Also, to identify the implications of the change for the area chosen. To create a PowerPoint presentation to present to the class acting as DEFRA.</i>
Process	The process should be broken down into clear, appropriate steps or stages. This might also involve guidance on parallel activities undertaken by different group members. Clear guidance about timescale is important; time allocation should provide challenge and require interdependence. Guidance may also be given on how to organise material in order to complete the task.	<i>Research current location and uses of the National Forest. Identify contiguous areas and make a reasoned choice of area for extension by identifying characteristics of area (land use, topography and soils, settlement, economic activity, tourism and infrastructure). Develop presentation. Make presentation to class.</i>
Resources	Resources will include at least some web-based sources. These will have been identified by the teacher and will ideally be hyperlinked from within a computer-based document, e.g. a web page or a word-processed task sheet. Other sources might include books, documents, video, etc., as resources permit or the task requires.	<i>Full WebQuest guidance. National Forest website. Other related websites. Ordnance Survey, land use and atlas maps. Remote sensing images. Documentary information about National Forest and surrounding areas.</i>
Evaluation	The task should include criteria which can be used by learners to evaluate their level of success in the task. Learners should be encouraged to identify and make explicit their approach(es) in undertaking the task and the effectiveness of the strategies employed.	<i>What did the group learn about the National Forest and issues of resource use and environmental management? How effective was the group's PowerPoint presentation? How did the group organise the task?</i>
Conclusion	A point of closure for the activity, possibly including a recap of what has been learned.	<i>Which group presented the most convincing case? Would it be a good idea to extend the National Forest? What would be the probable costs and benefits?</i>

Figure 5: The components of a WebQuest.



One of the key advantages, and hence appealing characteristics, of the WebQuest approach is its (deceptive) simplicity; another is that it is a modification of the sort of group project processes which may well already be familiar to the geography teacher, as can be seen from Figure 5. It is of course possible to take a WebQuest 'off the shelf' (e.g. from one of the WebQuest websites), but much better is to design a WebQuest of one's own, tailored for a specific purpose. Locally designed WebQuests can take account of the specific learners with whom they are to be used, and other relevant local circumstances, including the availability of resources. For example, the emphasis on web-based information could be reduced where, say, a single computer with internet access is available or increased where multiple simultaneous internet access is feasible.

Because of their inherent adaptability I have used WebQuests in my work in teacher education: to develop areas of subject knowledge and create web pages with PGCE novice teachers; with overseas MA students wishing to learn more about the UK educational system; and as a structure for online learning activities at doctoral level. WebQuests can be used at just about any educational level.

In addition to describing the structure and characteristic attributes of the WebQuest, Bernie Dodge, who first formally developed the WebQuest model with Tom Marsh in 1995, identifies 'five rules for writing a great WebQuest', summarised by the mnemonic FOCUS (Dodge, 2001). The five rules are summarised in Figure 6.

We see in Dodge's FOCUS model an explicit recognition of the role of scaffolding, and the aim of aiding students to do, with the assistance of the teacher as designer of the WebQuest (and hence as 'scaffolder'), what they could not achieve unaided. As with any scaffolding, the aim is to withdraw it as learners' autonomy increases. This is where the teacher's knowledge of the group comes into play. The teacher creates for a group of students a WebQuest which is in their zone of proximal development. Vygotskian social constructivism is at work, not only through teacher scaffolding, but also through students interacting with one another in the completion of a group assignment.

This chapter has concentrated on the use of WebQuests as representing an enquiry-based, constructivist use of computers in geography. There are, of course, numerous other ways of using computers to support learning in geography. Many of these approaches to the use of ICT in geography are relatively well documented elsewhere (e.g. King, 2000) and I do not propose to expand further on them here, save to say that many of them are as worthy of deeper investigation (see Chapter 5) as is the WebQuest approach described here. There are also many other ways of developing enquiry and thinking skills, involving greater or lesser degrees of learner autonomy – as we have seen, there is quite a lot of teacher planning and structuring involved in a WebQuest. It is also important to remember that a WebQuest is an 'enquiry-oriented activity', rather than a geographical enquiry *per se*.

Chapter 5 develops the point about geography teachers working together to research changes in practice (such as the introduction of WebQuests).

Figure 6: The FOCUS principles for 'writing a great WebQuest'. After: Dodge, 2001.



Rule	Detail
Find great sites	<p>The quality of a WebQuest depends in part on the quality of the websites used. You will need to find quality websites, and therefore need to have good internet searching skills. Learn how to use a powerful search engine, and be sure to bookmark the useful sites you find.</p>
Orchestrate your learners and resources	<p>One computer can support a WebQuest, but you may well have to take a directive role in its use. Where a limited number of computers are available you will need to organise their use in rotation. A single lesson in a computer suite means that preliminary and follow-up lessons require very careful thought so that time in the computer room is used well.</p> <p>Because a WebQuest will normally be a group task, you will need to organise and support groups of students every bit as carefully as resources. Significant aspects of successful group work include: interdependence between learners (students need one another to succeed at the task); interaction (discussion, collaborative support); accountability (at the group level for completing the task, and at the individual level for 'playing their part'); interpersonal and collaborative work skills (these may well not pre-exist and may have to be taught); group processing (the group should discuss how to improve its effectiveness). After: Johnson and Johnson, 2000.</p>
Challenge your learners to think	<p>If a WebQuest is to stimulate learners really to engage in higher order thinking, rather than just lower order processing and re-telling of factual content, you must build this into the task. Designing WebQuests is a skill, and, as with any skill, you can get better at it.</p>
Use the medium	<p>The internet supports more than static web pages providing information. News websites, for instance, are frequently updated. Video and audio may be available.</p> <p>Access to people by e-mail can bring an added dimension. This could be by using an 'ask an expert' website, or it could be something set up specifically for the WebQuest, e.g. an e-mail link with, say, a local planner or local businessperson.</p> <p>Another use of the medium can be that of the learners using networked technology to send messages to one another, store work in shared 'folders', etc.</p>
Scaffold high expectations	<p>Three particular types of scaffolding may be employed.</p> <p>Reception scaffolding helps learners get to grips with new, unfamiliar resources. 'A reception scaffold provides guidance in learning from a given resource and retaining what was learned' (Dodge, 2001).</p> <p>Transformation scaffolding supports learners in transforming knowledge encountered in a WebQuest into a new form. This might include guidance on looking for similarities and differences, pattern identification and other processes.</p> <p>Production scaffolding helps learners to go beyond what they can do unaided in creating a 'product' outcome. For instance, the use of a writing frame or a set of presentation templates may scaffold students in their completion of a WebQuest task at a higher level.</p>

Theory — INTO — Practice

The aim of *Theory into Practice* is to take aspects of current research into geographical education and deliver them directly to the classroom practitioner. Geography teachers from across the professional spectrum will be able to access research findings on particular issues which they can relate to their own particular context; thus students will benefit from new and well-informed approaches in the classroom, whilst teachers will keep their own professional development fresh and up-to-date.

A key element in the series is to encourage teachers to reconsider their thinking about teaching and learning in geography; we hope to reinvigorate the debate about how to teach geography and give teachers the support they need to revisit essential questions like:

- Why am I teaching this topic?
- Why am I teaching it this way?
- Is there a more enjoyable/challenging/interesting/successful way to teach it?
- What, how and why are the students learning?

The books in the series will provide a framework both for challenging current assumptions about the nature of the subject in schools, and for answering these questions in new and well-informed ways.

Each book in the series has been contributed by acknowledged experts in their particular fields.

WebQuests in Geography

Tony Fisher

This book explores the relationship between ICT and student learning in geography. In particular, it proposes the use of WebQuests as flexible, constructivist learning activities in the geography curriculum.