

Geographical enquiries and investigations

Enquiry is the process of finding out answers to questions. At its simplest, it involves encouraging children to ask questions and search for answers, based on what they might already know from data sources. As their skills develop, children can move to a more rigorous form of enquiry involving the development and testing of hypotheses' (NCC, 1993).

Learning and enquiry

Would you be surprised if, during an interview, you were asked how you think children learn? It is not an easy question. The most direct response I ever received was 'Somewhere between when I tell them and when they want to!'. What response would you give? And how does your notion of learning relate to your school's geography policy? This may sound like an uncomfortable grilling but these are very important questions.

Over the years teachers have come to recognise that the enquiry approach is a powerful strategy for promoting pupils' learning. Research suggests that meaningful learning occurs when investigations are directed by challenging questions and lead to solutions and/or reasoned viewpoints. Key questions help to guide this process, serving to signpost the paths that lead to understanding. Such an approach can help pupils to manage their own learning, handle issues objectively and use skills with a clear purpose.

The geography national curriculum makes specific reference to the enquiry approach. The programme of study clearly states that at both key stages pupils should be taught to ask geographical questions, observe and record information and express views about their surroundings. The emphasis on enquiry is maintained in the QCA schemes of work where enquiry questions are used to structure individual lessons. Clearly, therefore, those responsible for the curriculum's details were confident that geographical enquiry is a potent strategy for both teaching and learning; so let us investigate it further.

Theoretical background

The enquiry approach has a strong theoretical base. As Roberts (2003) points out, many educationalists follow Vygotsky in arguing that knowledge is not transmitted directly from teacher to pupil; rather pupils learn about the world by actively making sense of it for themselves. Vygotsky's work focused especially on the difference between what children can do on their own and what they can do with support from others. He called this the 'zone of proximal development'.

Vygotsky's work and the notion of the zone of proximal development has implications for geographical enquiries. It challenges the notion of totally independent work, reminds us that pupils will need teacher support when they are working with new ideas, and suggests that enquiries should not be beyond what they can achieve at the time (their zones of proximal

The main characteristics of key questions are that they:

- are an immensely powerful way of planning a curriculum with structure;
- unlock the door to learning about key ideas and processes;
- give direction and structure to a topic, emphasising what pupils are investigating and why;
- are the driving force behind enquiry learning;
- demand enquiry, require investigation and beg more questions;
- may be awareness raising, descriptive, explanatory, speculative, moral/value based or reflective;
- should be shared with pupils;
- provide professional development for teachers generating them;
- stimulate skills development to enable them to be investigated.

Figure 1 | Key questions.

development). In practice this means that pupils will need assistance from the teacher both when they are planning their enquiries and when they are conducting and analysing their investigations.

Asking questions

Educationalists have classified the questions posed in the classroom into many different types. As far as geography is concerned, the effectiveness of an enquiry will depend upon the teacher's understanding of key questions and general questioning skills. You might pause to ask yourself the following questions:

- How often are your questions posed clearly and succinctly?
- What proportion of your questions are open and closed?
- Do you deliberately arrange your questions in a logical sequence?
- How are you encouraging pupils to ask their own geographical questions?

It is well worth having a serious word with oneself, and with colleagues, about the use of questions in the classroom and their associated contribution to pupils' learning.

Remember too that asking questions is not restricted to cognitive matters only. Questions that are carefully and sensitively posed can also be effective for exploring the affective domain. Attitudes, beliefs and values are a vital ingredient of geographical studies and the subject offers many opportunities for considering the viewpoints of pupils and of other groups and individuals.

Key questions

Effective geographical enquiry depends initially upon the quality of the key questions posed for the learning experience. There have been many attempts to devise a definitive set of questions for geography. Storm (1989) suggested five basic questions which could be applied in any circumstances:

- What is this place like?
- Why is this place as it is?
- How is this place connected to other places?
- How is this place changing?
- What would it feel like to live in this place?

Notice that, above all, these questions beg more questions and require further investigation before an answer can be attempted.

The characteristics of key, or leading, questions are listed in Figure 1. The origin of key questions must obviously lie in the intended learning outcomes (objectives) of your curriculum and, for most teachers, these will be related to the programme of study for each key stage. Key questions unlock the door to learning about the concepts implicit in the programme of study statements for places and themes. Key questions also stimulate the development of the skills needed for the enquiry.

Stage 1a	Awareness raising
Stage 1b	Generating enabling questions
Stage 2	Collecting and recording information
Stage 3	Processing the gathered information
Stage 4	Drawing conclusions from the processed data
Stage 5	Sharing the learning and affective outcomes
Stage 6	Evaluation by all concerned

Figure 2 | A framework for managing a focused geographical enquiry

The best key questions will involve pupils in conducting a sustained enquiry and synthesising information. For example, you might ask them what life is like for the people who live in a specific village as opposed to those who live elsewhere. This question has real scope, unlike one asking how many people live in that village. The latter question can be tackled relatively easily using reference skills and leads to a closed and definite answer. In fact it is subsumed by the first question. To consolidate your thinking, compare the investigative potential of these two questions:

1. When did the Romans occupy England?
2. How do we know the Romans occupied England?

Generally, questions which begin with 'how' and 'why' are more conducive to geographical enquiry than those that begin with 'what' and 'when'.

Progression in enquiry

The precise wording of a key question can be significant. For instance, 'Why are there differences in land use in our local area?' encourages a higher level of geographical thinking and analysis than the question 'How is land used in our area?'. You will need to be aware of progression in geographical enquiry. It has been suggested (CWW, 1993) that teachers should consider the following parameters:

- the enquiry focus
- the degree of pupil involvement in planning
- the range of viewpoints considered in issues
- the nature of the skills needed for the investigation
- the range and type of resources

Add the progression in key questions and you have an excellent tool for monitoring this component of the curriculum through the key stage(s).

Photo | John Halocha.



Focused geographical enquiry

There is an important distinction between a focused enquiry route (Figure 2) and general enquiry which can permeate the curriculum. In Figure 2, notice how Stage 1a is an orientation phase when pupils relate their previous experiences and existing knowledge to the chosen enquiry. This is followed by a focusing phase (Stage 1b) when initiative-taking begins in earnest and a range of enabling questions is raised as the enquiry process gets started.

Stages 2, 3 and 4 mark the information phase and should be the time of intense and purposeful geographical activity. Factual statements and generalisations emerge during Stage 4 as pupils attempt to answer the key question. Interpersonal skills are practised during the important Stage 5, the outcome of which can influence the responses during Stage 6 when feelings are revealed, including self-evaluation. These last two stages represent the reflective phase. Such a structured and substantial piece of work could be part of topic work or make up the bulk of the study unit.

A well-organised, well-resourced and sharply focused geographical enquiry makes serious learning great fun for your pupils whether you are working in the classroom, school grounds

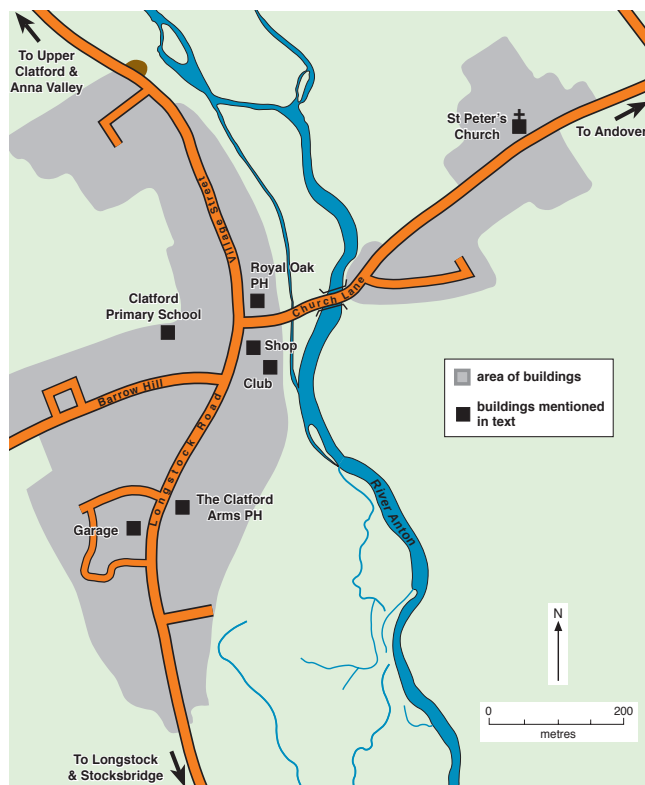


Figure 3 | The local area of Clatford CE Primary School, Goodworth Clatford.

or off-site. Procedural skills are practised as the enquiry process moves into action with individuals and learning teams engaging in activity-based tasks. You know it makes sense!

General enquiry

Unlike focused enquiry, a strategy of general enquiry should permeate the geography curriculum in your school. Posing challenging and open questions encourages the investigative and higher modes of thinking in the classroom. However there is a caveat: beware of over-dependence upon this approach; it can become a predictable recipe and restrict the variety of teaching and learning strategies used by the teacher. As one pupil reportedly advised a newcomer to the class: 'Don't look at anything in the room or she'll ask you a searching question about it!'. Many pupils pick up a great deal through direct teacher transmission; how you relate your knowledge and experience can be decisive.

An example of geographical enquiry: traffic problems in a school locality (key stage 2)

Background

Local issues lend themselves admirably to the enquiry approach as they are real and immediate. With this in mind, Clatford CE Primary School, near Andover in Hampshire, decided to investigate with year 6 the traffic problems created in the school's vicinity (Figure 3) by the arrival and departure of pupils. This issue related to the pupils' own school and was one in which they were likely to be personally involved – promising ingredients for a learning experience. Of course, this issue is not unique to the school and its village, Goodworth Clatford.

Approximately 12 hours of curriculum time were allocated to the topic and links with mathematics, ICT and English were recognised and established. Opportunities to revise, practise and learn geographical skills were identified and teacher enthusiasm was channelled into the enquiry process.

Four key questions emerged from discussion of the learning objectives and formed the framework for the enquiry.

Question 1: Why are journeys made?

Question 2: Where do our pupils come from and how do they get to school?

Question 3: What effect does our coming to and leaving school have upon the village?

Question 4: What can we do to ease or solve any problems that may be caused?

RESULTS OF QUESTIONNAIRE; GETTING TO SCHOOL

A total of 117 questionnaires was returned, representing 73% of the current number on roll. There were responses from all six teaching groups and the relatively large sample can be regarded as representative.

The following data was obtained

ORIGINS OF PUPILS COMING TO SCHOOL

Anna Valley	33%	Andover	26%
Upper Clatford	20%	Local village	19%
Chilbolton	1.5%	Longstock	0.5%

MODE OF TRAVEL TO ATTEND SCHOOL

Car	94%	Walk	5%	Bicycle	1%
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DIRECTION OF ARRIVAL BY CAR



REPORTED TIME OF USUAL ARRIVAL IN THE MORNING (by car)

0825	2%
0830	12%
0835	14%
0840	24%
0845	28%
0850	20%

72% arrive within 10 minutes

Figure 4 | Results of questionnaire on 'getting to school'.

Why are journeys made?

The topic opened with a discussion about journeys, including movements on the Earth's surface, spanning journeys within and beyond the classroom and within and beyond the home: helicopters passing over the school from nearby Middle Wallop; moles tunnelling under the school's playing field; clouds moving across the sky making shadows over the landscape; the River Anton flowing through the village; earwigs moving when a log is disturbed; getting to school and back home again. A matrix logging scale of journeys against, on, under and above the Earth's surface stimulates pupils to think geographically.

Reasons for such movements were discussed through questioning and many pupils began to grasp the following generalisations about journeys.

They:

- are made for a reason and have a purpose;
- can be of different lengths;
- take place at different times;
- use varying modes;
- can have peaks or rush-hours;
- can occur on, above or below the Earth's surface.

It was decided not to include the key idea that routes, for various reasons, often deviate from the most direct path, with main routes tending to be more direct than minor ones.

Where do our pupils come from and how do they get to school?

Following the exploratory session, pupils mapped their journeys from home to obtain groceries, clothing and medical care, one map being produced for each service. The journey to school was then the focus of investigation and the second key question stimulated the crucial enabling questions of 'What do we need to know?' and 'How do we find out?'.



Figure 5 | Logging the traffic outside the school.
Photo: Tina Horler.

A simple questionnaire was proposed to obtain the raw data: origin of journey and route followed; mode of transport; possible sharing of transport; and approximate time of arrival at school in the morning. Pupils soon realised the need for a simple format and agreed to observe anonymity by just recording the year group on the returns. In addition to ticking boxes, one section of the questionnaire invited parents/guardians to state their own feelings about taking and collecting youngsters from school (it also informed

parents of the work being carried out by year six). The questionnaires were distributed to all year groups with great anticipation and returns were grabbed avidly for processing.

The total number of returns represented almost three-quarters of the pupils and from such a representative sample it was possible to produce a summary which involved mathematical as well as drawing and design skills (Figure 4). One important finding was that seven out of ten pupils usually arrived at school during the ten minutes before the bell.

With at least nine out of ten arriving by car and two out of every three coming along Village

Weather	rain	dry	dry/cold	dry
Day and date	Tu 4/3	We 5/3	Th 6/3	Fr 7/3
Total no. of vehicles logged	259	225	339	223
No. coming from Anna Valley direction	114	85	92	101
No. coming from Longstock direction	100	65	195	70
No. coming down Church Lane	45	75	52	52
No. using Royal Oak car park	22	20	48	30
No. parked in road outside school	64	65	111	84
No. parked in Church Lane	0	7	0	1
% of cars arriving after 0835 hours	83	94	84	70
% of cars parked more than five minutes in road	3	11	2	2

Figure 6 | Results of fieldwork investigation into traffic near Clatford CE Primary School.

Cars parked across driveways of private houses, leaving the occupants unable to leave their property while the car was there. Many of these cars were left unattended for several minutes, some up to 10 minutes.

71 Longstock Road has had its garden spoilt with wheel marks where people have pulled in to the side to pass other cars.

People do U-turns at the T-junction.

People park on the zig zag lines.

Cars are parked outside the old people's bungalows for up to 10 minutes when parents take their children on to the playground and then stand and watch them play. This leads to other cars having to park even further up the village, thus increasing congestion.

During the period from 0830 to 0855, the road is reduced to single line traffic. When the buses arrive to take children to Stockbridge, there is a virtual standstill, as the road is totally blocked.

During this period mentioned, there can be as many as 19 cars per minute passing or parking.

One car was left unattended with its engine running.

One car was left unattended on the road with two small children inside.

Parents chat while their cars are parked on the highway which is obviously congested.

At no time was the Royal Oak car park full.

Figure 7 | Pupils' observations of traffic problems at Clatford CE Primary School

Street from the north, this led naturally to a closer look at things in the vicinity of the school gate.

Now came the time to organise a traffic count with a clear purpose in mind and to establish the real scale of the scene. The pupils measured the widths of the roads near the school and calculated the amount of land available for vehicles in the parking area opposite the entrance at the Royal Oak (the landlord offers this facility at dropping and collecting times). The average width and length of a car was also calculated. In addition pupils devised their own recording sheet for logging the arrival and departure of cars and organised coverage of the study area on four consecutive mornings in early March from 0815 to 0850 hours (Figure 5). It was raining the first morning!

Figure 6 presents data collected by pupils on the four mornings. They also reported

Movements Compared

On class 6 maps showing journeys from home to buy groceries, clothes and for medical care, people travel in different directions, although they are moving for the same purpose. They have different destinations.

Although we travel for the same purpose to Clatford School, we don't go to different destinations. Instead we all converge on one place, although we may come from different directions.

This pattern of movement will lead to traffic congestion.

Looking at traffic movement outside Clatford School

Traffic coming from Longstock has been found to be greater than that of Anna Valley / Upper Clatford in our traffic survey. However we have found out that most people coming to school come from Anna Valley / Upper Clatford, so we can only assume that the majority of traffic coming from Longstock passes school for a different reason than to drop off children there. This reason might be that they are coming along the Longstock Road and Bannock Hill turning right and driving into Andover. However this does make the traffic congestion outside Clatford School even though they do not park there. The busiest time is from 8:35 to 8:55.

The busiest day is a Thursday when 14 cars pass the school per minute. We think that Thursday is the busiest day because it is market day in Andover. On Thursday 339 cars passed or stopped outside the school.

Unfortunately most people park outside the school rather than in the Royal Oak car park. Because of laziness people do not park in the Royal Oak. They could park on Church Lane, but not on the corner because drivers cannot see round the corner of Longstock Road.

As I have said, I think that it would be a good idea to put a policeman on duty between 8:35 and 8:55 at the T-junction outside school. We also could have a no-stopping-for-more-than-3-minutes rule on the road outside the school. The policeman would ensure this. It would be helpful to have 2 mirrors at the junction where Church Lane meets the Longstock Road and the road from Anna Valley / Upper Clatford, so that drivers could see round the corner.

Figure 8 | Traffic survey by Laura May, year 6, Clatford CE Primary School near Andover.

events and human behaviour during the survey mornings (Figure 7). Pupils witnessed several examples of dangerous driving, illegal parking, lack of thought for local residents, lack of thought for other parents, a small example of gridlock, a relatively high density of traffic and the peaking of traffic.

What effect does our coming to and leaving school have upon the village?

The key issue had now emerged and most of the pupils were part of it! One youngster deduced that the problem must be worse at the end of the school day when the infants depart at 15.20 hours and Y3-6 come out ten minutes later. 'At least other people are not coming home from work at the same time' said another. Most pupils grasped the fact that all the traffic arriving and departing in such a short time had a clear impact on the school's immediate locality. It was decided that next year's class could build

upon these investigations and take a close look at the traffic situation in the afternoon, as well as checking if the current situation had improved or worsened. The latter was a perfect prompt for the final key question.

What can we do to ease or solve any problems?

The last key question contributed to the reflective phase of the enquiry. Several residents had complained about traffic chaos in the mornings, how their drives were blocked and their own journey to work hindered. The Parish Council had debated the matter and contacted the County Highway Authority who stated that while there had been no reported accidents at or near the T-junction, they would agree to mark white lines around the junction. Suggestions for alleviating the traffic problem included imposing a 20mph speed limit near the school, encouraging more pupils to cycle to school, raising awareness of the problem regularly in school newsletters and improving the provision of bus transport.

It was a salutary experience for the pupils to realise that problems of this kind cannot be solved in a trice and that some changes in drivers' behaviour would go far towards mitigating the effects upon the village. The last word comes from Laura May (Figure 8).



Photo | Paula Richardson.

An example of geographical enquiry: Parking problems in our local area (key stage 1)

The previous example was devised by primary school staff with help from a local geography consultant, before the availability of study units from QCA. For this example, the QCA scheme of

work Unit 2: How can we make our local area safer? is particularly relevant (Figure 9).

Four key questions drive the study unit which is aimed at key stage 1 and provide a structured pathway through it: 'Is our school on a busy road?', 'Is parking a problem?', 'How is parking controlled?' and 'How could the area be made safer for children?'. Match these against the characteristics of key questions listed in Figure 1. Consider the possible responses from an average Y6 pupil to the first three questions and compare the questions with those generated for the Clatford pupils. Can you see how key questions need to be carefully created for different ages and abilities and how they can require different depths of investigation and involve greater skill development? Look again at the previously listed parameters for considering progression in enquiries.

The QCA documentation clearly relates the key questions to the learning objectives (what children should learn) and offers possible teaching activities leading to (possible) learning outcomes. The expectation that most pupils will be able to carry out a small local survey, draw some specific conclusions from the evidence they find and discuss ways of tackling the parking issue in their locality could apply equally well to the Y6 investigation described. In theory, the general progression in geographical experiences and learning over the intervening years must lead to greater sophistication of responses, outcomes and skills practised from the Y6 pupils. The latter may even have begun to twig the overlap with other subjects!

Teachers who are unaware of the QCA units at key stages 1 and 2 should waste no time in acquiring them. Some professional development will come from studying and using them intelligently and the natural step is to use the enquiry model provided to create, over time, your own units. One always gets a kick from creating quality material and you learn so much in the process.

Postscript

This chapter has attempted to analyse a fundamental element of the geography national curriculum in a nutshell and to amplify it through exemplars. Like effective INSET, has it provoked thought, challenged you professionally and sown the seeds of change in pedagogical attitudes and behaviour?

Clearly, geographical enquiry is a teaching methodology, part of the teacher's toolbox, and is a professional skill that needs to be developed in tandem with the crucial ability to think

Learning objectives	Possible teaching activities
Children should learn	
Is our school on a busy road?	
- about the character of a place - to ask geographical questions - geographical terms	- Discuss with the children what makes a busy or quiet road. - Arrange for the children to complete a simple traffic survey on the road outside the school. - With the children's help, label a wall display of photographs of the road outside the school to show aspects related to traffic, e.g. road signs, road markings. - Ask the children to think about their own road at home and decide whether it is quieter or noisier than the school road. - Encourage the children to think up their own questions about traffic around the school.
Is parking a problem?	
to carry out a small-scale investigation about parking in the local area	- Discuss with the children what makes a 'fair' test in a survey, e.g. times, frequency, place. - With the children's help, design and carry out a survey of the numbers of cars parked in the street. Ask the children to present the results as a graph, using simple graphing software, and analyse them. - Ask the children to consider questions like: Are the parked cars there all day? Where do people go when they park their cars?
How is parking controlled?	
- to observe, recognise and describe the main ways in which parking is controlled - to undertake simple mapping tasks	- Discuss with the children the ways in which parking is controlled, e.g. yellow lines, pedestrian crossing, 'lollipop' men or ladies, clearways. - Visit the road outside the school and ask the children either: to record on a map the various ways used to control traffic; or to observe the parking controls and then on return to the classroom draw a map from memory to show the observations. - Discuss with the class the accuracy of the two methods.
How could the area be made safer for pupils?	
- to express views about making an area safer - to recognise ways of changing the environment	- Ask the children to identify methods of making an area safer, e.g. cycleways, pavements, fencing, no parking zones, road signs, pedestrian crossings, and to think about how the school grounds and other streets they know are made safe. - Ask the children to make use of all the evidence they have collected (photographs and survey results) to write a letter to the transport department at the local council to ask about the possibility of a safety feature, e.g. a pedestrian crossing, being constructed.

Figure 9 | Geography scheme of work Unit 2: How can we make the local area safer? Source: QCA, 2000. Reproduced with kind permission of Qualifications and Curriculum Authority.

geographically. As one of the Ofsted annual reports declares: 'Enquiry skills are best developed when addressing a real problem... The best enquiries build cumulatively on pupils' previous learning and explore the issues in ever increasing depth' (Ofsted, 2002, p. 7).

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