GTIP Think Piece –Questioning (Phil Wood)

In this Think Piece, Phil Wood, lecturer at the School of Education, University of Leicester considers the importance of questioning in developing an enquiring classroom.

Menu

Introduction

'Effective questioning has greater potential than any other teaching method for stimulating student thinking…' (Kissock & Iyortsuun, 1982, p. ix)

The asking of questions is a major element of communication within any classroom. Various studies have emphasised the extent to which this is true, Kissock and Iyortsuun (1982) counted as many as 30 questions being asked in a single 'micro-lesson' of ten minutes, whilst Morgan and Saxton (1991) quote a typical teacher as asking between 300 and 400 questions a day.

To highlight the resultant frequency of questions, once other activities have been accounted for (such as class work and 'management' of the classroom) this leads to a teacher question once every 5.6 to 11 seconds. If the quote above is true, that effective questioning has a clear potential for stimulating thinking in our students, it becomes of central importance for us to reflect on the questions we ask, and how we ask them. Consequently, we need to consider several issues if we are to develop this critical skill in promoting active and interesting classrooms and learning experiences.

1. How might we classify questions?
2. What do we need to consider in developing our questioning skills?
3. If we want to engender a thinking, enquiring environment in our classrooms, how might we help students develop their own questioning skills?

How might we classify questions?

There are several ways in which we might start to think about the nature of our questions. In doing so, we also need to consider the purpose of those questions; what are we trying to achieve in questioning students at any particular point in time?

There are a number of purposes in asking questions, which might include:

- to determine the level of knowledge students bring to the lesson to help gauge prior learning;
- to gauge understanding and performance;
- to stimulate thinking;
- to help clarify the ideas students hold;
- to encourage motivation through active participation;
- to signal that we have an interest in students' thoughts;
- to encourage problem solving;
- to help students learn from one another;
- to deepen thinking levels;
- to challenge beliefs and values;
- to control student behaviours (beyond the scope of the present Think Piece).

This is not an exhaustive list, but might act as a useful support in considering the types of questions we receive or ask.

> **Reflection Point**
> When you get an opportunity to observe a lesson or lessons in a school placement, note down some of the questions the teacher asks when discussing or explaining ideas to students. What types of response do they illicit? Which questions seem to have the greatest impact?
>
> Compare your observations with another PGCE student in your group. What are your conclusions concerning the nature of good questions?

A way of classifying questions is to understand the type of transaction between student and teacher. Where the teacher asks a question which is intended to stimulate thinking, this can be defined as an **open** question. If, however, the teacher is asking a question which relies on the student(s) regurgitating what has already been taught, or guessing an answer which the teacher is holding in their head, this can be classed as a **closed** question. The context is what is most important here, as it is the intention of the teacher that primarily defines the nature of the question. Where there is a focus on 'correct information' which the teacher has already (privately) defined, the question is more closed, but where there is an authentic interest in developing thinking and exploratory dialogue, the question becomes open. This is a crucial factor which the teacher needs to consider in the type of question(s) they are asking.

> **Reflection Point**
> Consider the following two questions:
>
> 'What is the evidence for crustal plates?'
>
> 'What ideas might be important in defining place?'
>
> Note down how these questions might be used within the classroom as both open and closed questions.

This differentiation in the type of questioning is important as it plays an important role in setting the climate for learning within the classroom. Kerry (1998) reports that in observing a number of lessons, he found that at least 60% of questions asked were recall questions, with 12-30% more being management questions (for example, 'Would you sit down please?'), leaving only approximately 4% of questions being of a higher order, or open, in nature.

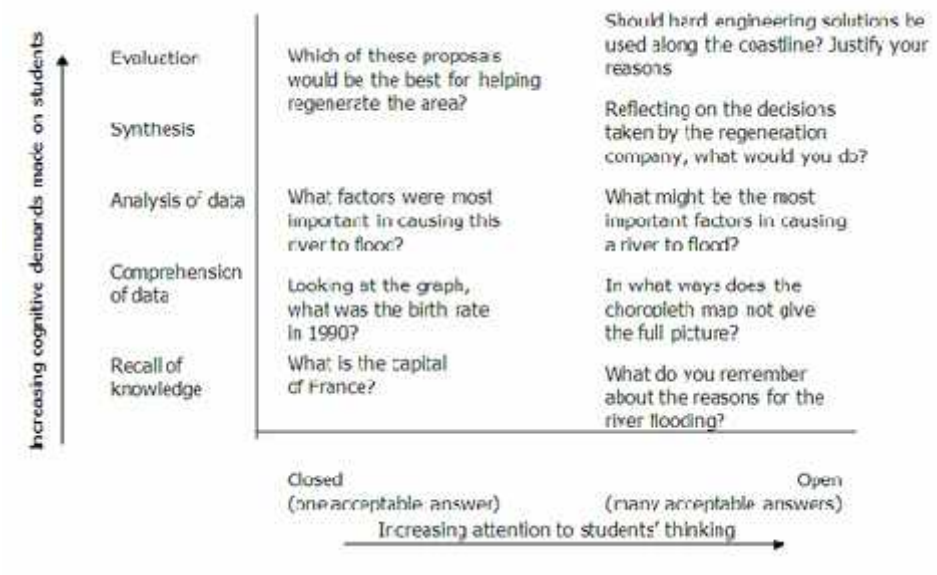
If open questions are those which develop student thinking, we can develop this notion further through the use of Bloom's Taxonomy as a framework for questioning. Bloom & Krathwohl (1965) classified thinking activities into a number of levels, from those activities which require little thought and which are essentially the remembering of facts, to the evaluation of information, concepts and ideas requiring both synthesis and judgement. Such a framework can be easily refocused on questioning as given below in Table 1.

Table 1. Linking Bloom's Taxonomy to questioning

Examples of Geographical questions	Bloom's Taxonomy	Question foci
• *Which was the better strategy to use?* • *Which management choice is likely to have the most positive impact?*	Evaluation	Assess, judge, evaluate, compare and contrast
• *What conclusions can you draw from the experiment?* • *Reflecting on the supposed causes of global warming what would you do?*	Synthesis	Reflect, predict, speculate, design, create, combine, hypothesise
• *Why did this NGO decide this was the most appropriate way of dealing with the problem?* • *What is the function of regeneration projects?*	Analysis	Explain, infer, draw conclusions, prioritise
• *Why?* • *Why does the climate graph for Kathmandu show this pattern?*	Application	Use, interpret, use in a new context, relate
• *How do waves erode the coast?* • *Describe the climate graph.*	Comprehension	Explain, summarise, describe, compare
• *What is the capital city of Germany?* • *What is the name for a multi-channelled river?*	Knowledge	Define, recall, describe

Ultimately, we can also fuse the notions of open/closed questioning with orders of thinking to give us a synthesised model of teacher questioning in the classroom, as proposed by Roberts (1986), and shown below (Figure 1).

Figure 1. Synthesising question type and cognitive demand (Graph closely based on Roberts (1986))



Reflection Point
If you have completed the first reflection exercise, and have a number of questions written down, try to draw your own graph like the one above, plotting the position of the questions asked. What does this tell you about the nature of questioning in the classroom, and does it agree with the results of Kerry's research outlined above concerning the types of questions asked?

These different ways of classifying questions act as a starting point in helping us reflect on the purpose and challenge of questions, so that as we develop our practice in using them, we can begin to reflect on their utility. However, regardless of the type of question we ask, we also need to ensure that we do so skilfully so that each of the questions we use has maximum impact on student learning.

What do we need to consider in developing our questioning skills?
As is demonstrated above, questioning is a central and important skill which teachers need to consciously develop. As a consequence, there are a number of issues which need to be considered if that questioning is going to have a maximum positive impact on student learning.

Planning questions
Kerry (1998) highlights the need to plan key questions before the lesson takes place to ensure that the focus of discussion has already been considered. This is not to suggest that every question which the teacher thinks might be asked should be listed, but that three or four key questions should be developed which will help students to develop their understanding, and which will act as critical starting points for further debate and questioning. As an example, a teacher might be introducing a lesson on the students' experience as consumers as the beginning of a longer and larger scale investigation into the geography of consumerism and globalisation. In planning for such a lesson, the three main questions which the teacher wants to include might be:

'Which shops do you most frequently buy things from and what do you buy?'

'Why do you buy those things?'

'Where are the items you buy actually made?'

Other questions may well occur between these main questions as the discussion develops, and they may indeed lead to more, and more important, questions, but by having these to begin with, the teacher can ensure that important issues which they want to include in the lesson are present.

However, in doing this, we should be careful not to have an answer in our minds that we are attempting to get the students to find. We have to be open to alternative responses if they have merit; this is where planning has to ensure a degree of flexibility.

> **Reflection Point**
> Look through the new Key Stage 3 Programme of Study, and choose an area of interest. Try to write down some of the main questions you think need to be asked when covering the topic. Share your ideas with someone else in your group.
>
> When you note the main questions for lessons you are teaching, reflect on their success or otherwise after the lesson.

Using appropriate language

One of the most difficult facets of developing classroom discussion and questioning for beginning teachers is the level of language they should use with students. Where individuals have come straight from their own learning as geography undergraduates, there is a tendency for language to be used at a level which is above that which students can understand. It is therefore extremely important for beginning teachers to consciously consider the level of language they intend to use in the classroom, including where they are planning questions.

> **Reflection Point**
> One way in which you might be able to 'tune-in' to the level of language use in the classroom, is to look through textbooks and schemes of work provided by your placement mentor, noting down the level of jargon being used. In addition, see if there are examples of keywords for areas of the curriculum which may well have been developed as a part of cross-curricular literacy. Finally, as above, observe some lessons and during the activities which are centred around dialogue, note down some of the geographical terms used.

Distributing the questions

All too often, classrooms are places where children can hide, even when in full view of the teacher. This is because there is a cultural tendency to ask students to put up their hands if they think they know the answer. This obviously allows a lesson to retain a level of pace, leading to the teacher believing that learning is taking hold. However, if four of 30 students put up their hands, what is this actually telling us? Do the other 26 not know the answer, in which case should we move on? Do 12 of the 26 not know the answer, with 8 not being sure and 6 preferring not to get involved even though they know the correct response?

There is a need, then, to alter the way in which we ask questions. We can still invite responses through the use of hands, but this should be interspersed with other methods. The most common alternative is the 'conscription' where the teacher names a student and asks them to respond. This can be a very useful alternative as it allows the teacher to involve a greater number of individuals,

and when used carefully can actually help to motivate students in their learning. If the teacher has discussed a point with an individual in an activity prior to the questioning and knows they have the correct answer, they can then ask them the question pertaining to that issue, being able to publicly praise them for a useful answer. Such an approach is especially useful when we can give praise to an individual who lacks confidence.

There is evidence (Kerry, 1998) that students will move to particular parts of the room, if able, dependent on the level to which they would like to be involved in the lesson. Those at the front and in the centre are the students most keen to be noticed and involved, whilst towards the back of the room, especially in the corners, those who prefer to keep a low profile, and disengage from the lesson will tend to congregate. By being conscious that this is the case, and by conscripting responses, the teacher can ensure a greater level of on task behaviour throughout the classroom.

Reflection Point
Consider how you distribute questions in your own practice. Ask another student teacher, or your school based mentor to observe you teaching. Prepare a plan of the room, and note the position of each student, together with their sex. Every time a student answers a question, ask your observer to tick against the relevant marker for that student.

Once you have finished the lesson, look at the resultant plan with the observer of your lesson. Are there any patterns in the data relating to:

- the number of students involved?
- the number of times any one student answered a question?
- distribution according to sex and ethnicity?

Timing and pausing
The delivery of questions is also of great importance. Questions need to be clearly asked, and then time needs to be given for students to consider their responses. Past research has demonstrated that many teachers give less than one second response time on average between finishing their question and receiving an answer; many teachers feel it necessary to fill the void of silence. However, if we are attempting to ask questions which require students to think before responding, due to their high order and open character, we should allow such silences to occur. It also demonstrates to the students that a response is genuinely sought. Where questions are almost immediately answered by the teacher students are able to become passive in the lesson as they know that the teacher will essentially conduct a discussion with themselves!

Reflection Point
Try timing yourself for 5, 10, and 30 seconds, remaining silent for each of these periods. Do they feel much longer? By getting used to the gaps involved, it might be easier to hold your nerve in the classroom.

Developing thinking
When we ask questions of students there is always the possibility that they will not know the answer or understand the question, or will not be willing to offer a response if they are not sure. This is where we need to consider the use of scaffolding. Having looked at some climate data and some images of Boscastle, we can ask the following question:

'What led to the flooding at Boscastle?'

In this instant, we are interested in the students' interpretation and evaluation of resources, enabling them to develop their own theories about the flood event. However, we might be met with silence from a group of students as it is a high order and very open question. Alternatively, some of the students might be unsure of their answer, remaining silent as a result. At this point, we need to drop the challenge level in the question, most often by breaking it up into smaller parts, for example:

'Can you describe the landscape surrounding Boscastle?'

'It is on the coast, at the mouth of a small valley, with surrounding high ground.'

'Good. How was the weather linked to the flooding?'

'There had been very heavy rain, a summer storm.'

'O.K., so what happened to the water once it had hit the ground?'

etc.

By breaking down the main question into steps which will eventually lead back to answering the original question, you will be scaffolding student learning, and it is quite common not to have to complete the stepped exercise as students begin to pull ahead of the dialogue in their own minds. Once they do this, you may well find individuals who are willing to offer the remainder of the explanation.

Interestingly, by using this scaffolding method, you are also increasing the level of thinking:

What happened to the water once it hit the ground?	**analysis**
How was the weather linked to the flooding?	**comprehension**
Can you describe the landscape?	**knowledge**

Such scaffolding takes practice, but by developing this skill, questioning can be used critically and as a vehicle for developing the thinking of students.

Giving students the opportunity to develop their questioning skills

'*All our knowledge results from questions, which is another way of saying that question-asking is our most important intellectual tool*'
(Postman (1979), in Morgan and Saxton (1991), p.9)

Enquiry based learning is a major component of Geography at Key Stage 3, being enshrined not only in the programme of study, but in the National Curriculum level descriptors also. Students cannot be expected to undertake an enquiry approach to their learning if they are unable to ask questions. In the same way we cannot expect students to develop traits of independent learning, or to critically engage with the peer and self-assess strands of Assessment for Learning unless they can ask pertinent questions. It is therefore crucial that we help students develop their own questioning skills.

There are a number of ways in which these traits can be developed, but two examples are offered below.

Socratic questioning

'*So, since the soul can never die, and has been born over and over again, and has already seen what there is in this world, and what there is in the world beyond – i.e. absolutely everything – there's nothing it hasn't already learned about. So it wouldn't be at all surprising if it managed to remember things, the things it used to know, either about being good or about anything else.*' (Plato, 2005, p. 101-102)

Here, Socrates is talking to a young man called Meno, explaining that we all already know everything, but don't necessarily have the knowledge in a conscious form. He attempts, through the dialogue with the youth whose name is the title of the discourse (written by Plato), to demonstrate that by careful questioning, explanations and concepts can be uncovered and built from a starting point where those involved believe they know nothing of the subject matter.

Jarvis (2006) makes the obvious point that the majority of individuals no longer believe in the idea of reincarnation, but argues that we can nevertheless transplant the notion of 'implicit' knowledge into the place of reincarnation. We all have a large volume of knowledge which we do not consciously debate or consider on a day to day basis, but which nevertheless still exists. This is especially true of students who often decouple the life they lead outside of school from that which exists within, due to a belief that much of their experiential knowledge is a form of 'unofficial' knowledge which holds little value in a classroom context. We can use Socratic questioning with students to allow them to experience how its use can draw out knowledge and understanding they are not necessarily conscious of.
Download: Socratic questioning worksheet

Look at the Socratic questioning worksheet. The exercise is a simple questioning exercise, where the listed questions are used as a start point to interrogate the prior knowledge and understanding of another person. Usually, one student will question a partner for three or four minutes, and then the roles will be reversed. It is important that the students understand that at no point should they answer a question simply 'yes' or 'no'. Therefore, a dialogue might begin to develop such as:

'How do we know that land-use differs within cities?'

'Cause I live in an area with houses, but when I go shopping in the centre of the city, there are very different kinds of building.'

The first student should then attempt to develop the initial observation to see if there is a deeper and broader understanding:

'Is this the only difference in land-use?'

It is here that the students are beginning to develop and consider their own questions.

'No, school is next to an industrial estate on the edge of town, so I guess there is another type of land-use there as well.'

This developing dialogue can then be used for as long as the teacher and students feel that useful knowledge and understanding is being generated. Each time a dialogue falters, the next question can be asked. Finally, at the end of the exercise, the whole group can come back together to share and rationalise the knowledge and understanding they have developed.

In this way, much of the knowledge and understanding that is required for the coverage of a scheme

of work can actually be seen to already exist – often to the surprise of both teacher and students alike.

Using snowballing in student questioning

Students can be given the opportunity to develop and discuss their own use of questioning by involving them in generating their own learning experiences, especially through the use of snowballing. This is a simple technique which involves giving the students some form of stimulus material on a selected topic.

Having had time to look at the information, students are then asked to generate three questions they would want to ask in trying to understand the topic. At this stage it should be highlighted that they should work individually and in silence, before giving a timed period (normally about 2 minutes) for writing down their questions. They should understand that they need three questions, even if they do not think them to be very good – one excellent question is not enough! Once this has been done, students should then join together in pairs, and be given three minutes to discuss their questions, deciding on the best three as a pair. This is then the basis for a second time limited discussion in groups of four or six, again with the task of choosing the best three questions. At this stage, the groups feed back as a whole class, and from their questions, the best five or six are chosen by the class and used to complete the topic.

A simple example of this is the comparison of two volcanic eruptions, an exercise undertaken with a GCSE group (Wood, 2006). Students had studied two eruptions, the intention being to compare them. By carrying out the snowballing exercise, students were enhancing their knowledge and understanding of the eruptions; the exercise became an opportunity for peer and self-assessment as students discussed their ideas. However, as importantly, they were also modelling the creation of useful questions through discussing the focus, validity, and comparative strengths of individual questions which had been posed. The questions chosen by the group at the end of the lesson were:

1. What is the tectonic setting of the volcanoes?
2. What were the characteristics of each volcano?
3. What were the warning signs of the eruptions?
4. What were the primary and secondary effects of the eruptions?
5. How do the differences in effects correspond with the development of the affected areas?

These questions then acted as the basis for a comparative essay on the two eruptions.

By carrying out this type of exercise, students learn how to pose their own geographical questions, and if used on a regular basis, can help in the move towards more independent enquiry based learning where the teacher poses the problem, but the students become increasingly confident in creating the structure of the investigation through their own questioning.

Final Thoughts

As students start their A-level courses, the traits which teachers prize the most are those linked to independent learning. At the heart of this form of learning is the ability of students to question their own learning, their level of understanding, and how they might go forward in that learning. However, such a critical capacity can only develop if students can ask the pertinent questions at the correct times. Questioning is not a skill which we just inherit, we need to develop it through trial and error. One way of achieving this is to have questioning modelled for us by others who are excellent in their use – our teachers. However, we also need the space to develop our own skills.

The geography classroom is an ideal environment for developing the use of this skill, and it is therefore crucial that teachers not only learn how to pose their own questions to greatest effect, but also guide and support students in developing their own enquiries about the world around them. As Postman argues:

'*Nothing can be more basic than learning how to ask productive questions*' (Postman (1979), in Morgan and Saxton (1991), p.3)

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Further Reading

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