Critical thinking and problem solving; reporting school-based practice: secondary schools.

A central element of the Connecting Classrooms Critical Thinking and Problem Solving programme is that participants have the opportunity of putting aspects of the course into practice in their classrooms, reviewing the outcomes, and sharing their findings with other course members, together with other schools in the UK and internationally. These reports are a sample from the groups of teachers in from Cohort 1 (Spring 2016), and Cohort 2 (Summer 2016).

A. **Developing questioning in geography**: Bishop Justus C of E School (page 2)

B. **Decision making skills in GCSE geography**: Central Foundation Girls School, Tower Hamlets; (page 4)

C. **Exploring questioning techniques to support critical thinking and develop ideas**: Chesterton Community College (page 6)

D. **Using critical thinking to underpin enquiry**: Christ the King Catholic High School and Sixth Form Centre, Merseyside (page 10)

E. **Focussed thinking for Key Stage 3**: The Cooper School, Bicester (page 12)

F. **Using two new methods to encourage critical engagement of students on the topic of climate change**: Hills Road Sixth Form College, Cambridge (page 14)

G. **Asking deeper higher order questions in geography**: Hitchen Girls School, Hitchen; (page 17)

H. **Developing evaluation and analysis skills in A level Geography essay writing using critical thinking techniques**: The King John School, Benfleet, Essex (page 18)

I. **Promoting independent learning through critical thinking in geography**: Maidstone Grammar School for Girls (page 20)

J. **Developing questioning at the heart of all lessons**: Mary Webb School and Science College (page 22).
Developing questioning in geography: Bishop Justus C of E School

What did we want to achieve?

Students struggle to demonstrate deep thinking, so the aim was to develop their ability to question concepts and challenge ideas. This is particularly a problem for our Key Stage 5 students who must be able to demonstrate this as part of their assessment with a focus on critical understanding. As this has not been achieved at Key Stage 4 and Key Stage 3, students then struggle with this skill. As such the investigation focused on Key Stage 3 and Key Stage 4 with the idea that improving their ability to question at this level will then enable them to have already developed this skill by the time they reach Key Stage 5.

How did we go about it?

I assessed the base level of critical questioning with students in Years 7, 8 and 9. Interestingly, students expressed that they didn’t find Geography particularly challenging at Key Stage 3 whilst Key Stage 4 students did find it challenging. They also said that they didn’t use the thinking time they were given effectively, although they felt they were given enough time. I assessed the types of questions they were asking, with most of them being low order questions with some deeper thinking questions demonstrated.

Once I had done this base line assessment I implemented a questioning tool in the classroom. This set out a range of possible questions by a themed focus. For example, when looking at sources, one question is ‘Where is this information from?’ Student often take what is said as unquestionable and these questions gave the students a platform to begin to unpick reliability, view points, and challenge their ideas. I explained the tool and would then refer to it in lessons, asking pupils to design their own questions or pick the question they would most like to ask. For example, with Year 7 we were looking at Food and Farming, watching a video on where chocolate comes from linked to child labour and Fair Trade. At the end of the video students were asked to design questions they would like to ask. The questions were insightful and demonstrated the students had really thought about the different angles of the film – who had made it, what was the purpose, what you would do if you were the farmer in that position, is fair trade really fair. I was impressed with the detail and thought in their questions when the idea of questioning is more specifically role modelled for them and clear examples given. It provoked an insightful discussion, with critical thinking clearly demonstrated.

I had the tools out on each desk for every lesson for a period of 6 weeks. Over this time I noted the change in their questioning. There was a clear shift towards higher order questions with deep thinking demonstrated. After this period of time I carried out another survey for each of the classes I had been using the tool with. The response was very positive from the students, with most students agreeing that the tool had improved their confidence in questioning in Geography. They also felt that the tool had been useful and that overall they had improved their critical thinking. This was supported by the types of questions that students were asking in class.
How well did we achieve our aims?

Overall, the aims were achieved with pupils developing their questioning. Whilst this was evident in class discussion, I would like to develop this further, perhaps using silent debates to ensure that each pupil is developing their critical understanding. The feedback from students also indicated that the tool could be adapted to make it more user friendly with different colours and pictures to help them further.

What was the impact on pupils?

Overall, the impact was very positive with students more engaged in topics and a clear focus developing amongst pupils on challenging ideas and thinking critically. I believe that Geography can be made more challenging for these students by getting them to question and challenge concepts and ideas which will assist them greatly at Key Stage 5. Pupils demonstrated that they could think for themselves and produce some excellent questions when given support to do this.

Other outcomes:

I ensured that throughout the investigation I was carefully modelling questions and discussing what made a good question with pupils. I gave more time in lessons to allow them to think about questions and challenge the ideas of the lesson. There was more flexibility for discussion which led to some interesting points at times and certainly ensured more progress was achieved. It is clear that students can think for themselves when given more opportunity and some support.

I intend to share what I have found from my investigation at our School’s Teaching and Learning Forum and have already discussed the project with the Head Teacher. This will enable other subjects to learn from this study in Geography as this can easily be adapted to other subjects. This will help other teachers to support children in thinking independently and ensure our students continue to grow as critical thinkers. Going forward the head of department for Geography will be involved along with the head of Teaching and Learning.

School context: Bishop Justus C of E School is a mixed academy in South East London.

Louise Gibbons, Geography Class Teacher, Bishop Justus C of E School.
Decision making skills in GCSE geography: Central Foundation Girls School, Tower Hamlets

What did we want to achieve?

- To improve the decision making skills in GCSE Edexcel B DME Unit 3 exam paper.
- To give students the space to ask and answer questions about the resource booklet and examine the options available and the impacts and the different players involved.

How did we go about it?

Using higher order thinking questions, we put the students into groups to examine the four different options for Jamaica (using the Unit 3 paper, June 2014):

- Option 1: Encourage the rapid development of the tourist industry but discourage the bauxite industry.
- Option 2: Encourage the rapid development of the bauxite industry but discourage further tourist development.
- Option 3: Encourage the rapid development of both tourism and the bauxite industry.
- Option 4: Discourage the development of both tourist and bauxite industries and identify new ways of developing the economy.

In groups students discussed the different options available for future development in Jamaica. Using these they completed a worksheet where they needed to choose the preferred option for each group. Students identified the different players involved and how each option will impact them. We used a conflict matrix to show the opinions of different players towards each other.

How well did we achieve our aims?

Students were able to better identify how each option would impact the different groups of people. The options ranged from Jamaica developing its tourism and/or mining industries or to try something new.

Students were able to identify which groups would agree or disagree with each other, using the conflict matrix.

Students were then able to answer the 12 mark question at the end of the exam paper, making reference to the impacts on the different groups of people, both positive and negative.
Select one option you think would be the best long-term plan to improve Jamaica’s economic growth. Explain why your selected option is the best available.

Use information from the Resource Booklet and your knowledge from Units 1 and 2 to support your answer. (12 marks)

Chosen option .................................................................

What was the impact on pupils?

Middle ability students and less able students groups were better able to answer the twelve mark question, where students had to decide on the best option for the future development of Jamaica, by weighing up the development of tourism with the further development of bauxite mining or trying something new.

Students were more engaged in the activity as they had a better all-round understanding of the impacts of their choices on the different groups of people. They were encouraged to look at the impacts as social, economic, environmental and political.

Other outcomes:

The approach and resources on how to develop key DME skills with students were shared with department for other teachers to use with their GCSE classes.

Download

- DME group work key questions
- Jamaica conflict matrix
- Decision making exercise Jamaica: different groups.

Rahila Rehman, Head of Geography, Central Foundation Girls School.
Exploring questioning techniques to support critical thinking and develop ideas: Chesterton Community College.

What did we want to achieve?

The purpose of this research is to identify a variety of questioning/ critical thinking techniques to support learning. The end result would be to see how students form an answer to an exam question (AQA B Geography):

2 (b) (ii) Describe how conditions in urban areas are being improved in less developed countries. Use examples. (6 marks) (June 2011).

I wanted students to develop ideas and think more critically about their responses to questions. I wanted them to explore sources of evidence and to think more critically about them being aware that they can be subject to bias.

How did we go about it?

The research into the questioning/ critical thinking techniques will be carried out over two lessons with a Year 10 GCSE Geography class. The topic studied is the Urban Environment and the lesson title: Destroy slums and rebuild to make money. Is this right for Dharavi? The questioning/ critical thinking techniques I will explore are;

- ‘Layers of inference’ (Roberts. M, 2013),
- Levelled spider diagram,
- Pose, Pause, Pounce, Bounce (Wallace, I, 2012),
- Kahoot
- Debate where students have the following roles; Developers/ planners, Residents, Government and Potential migrants from a rural area thinking about moving.

Students have access to tablet devices with applications to aide learning. The majority of these techniques allowed for no hands up.

Layers of inference

Roberts (2013) states that ‘layers of inference’ encourages the examination of sources, supports being able to make ‘informed guesses’, aware that sources may only present ‘partial evidence’, to ‘be curious and to ask questions’, ‘discuss ideas’, ‘critical, scrutinising what is shown and what is not shown in a piece of evidence’ and reveals what is understood and possibly ‘misunderstandings’ (Roberts. M, 2013). Roberts uses this method in a Geographical way but it can be used in a variety of subjects to question a range of sources from ‘text, photographs, maps, graphs, statistics or film’ (Roberts. M, 2013).

The source used for this technique was a photo of Dharavi slum. The questions used for ‘layers of Inference’ are: ‘what else would I like to find out? What other questions do I need to ask? What does the source not tell me? What can I infer from the source? What guesses can I make? What does the source definitely tell me? Roberts has two templates in her book for this activity however, I decided to use an app called ‘Padlet’. Each question was displayed on a Padlet which would appear on the Interactive White Board (IWB) with
students’ responses to the questions. An alternative would be to split the desk into four sections, writing questions into those sections and to write responses on the desks with wipe board markers.

What Went Well:

- This technique works very well for developing ideas.
- It encourages students to be critical thinkers when using a source like a photo.
- It helps students to gather a deeper ‘sense of place’ (Massey, D, 1991).
- Students thought critically about whether the photograph depicted a true representation of Dharavi and were able to make inferences about the source e.g. ‘Is there a strong community?’ What shows this place could have a strong sense of community?’ It shows they reuse things because the shacks are built out of reusable materials.

Even Better If:

- Less able students may struggle with some of the questions and may need more support with this but it is easy to differentiate through outcome.

**Three level spider diagram**

Students had to do some research about how the problems of urban growth in LEDCs are tackled? They had to use a PDF and internet research to help them find out how to tackle the problems, their advantages and disadvantages and how they had an impact on different groups of people. There are three points therefore it is a three level spider diagram. This got the students to think critically about each way the problems could be tackled and its impact on residents, developers/planners and the government.

What Went Well:

- Good for getting ideas down.
- Supports students in constructing levelled answers for level three exam questions.
- Helps students to extend their answers.
- Critical thinking.

Even Better if:

- Students need detailed resources for their answers.
- Some students find it challenging to present their work in a visual way like a spider diagram and wanted to present the information in an alternative format.
**Pose, Pause, Pounce, Bounce**

‘Pose, Pause, Pounce, Bounce’ (Wallace. I, 2012) is an AfL questioning technique great for finding out how much students have learnt about a topic and encourages in depth thinking about a topic through discussion. A question is posed to the class, the class pauses to think about the question and reflect, use a soft toy or ball to throw to a random student to answer the question (pounce) and bounce to another student to develop the answer further.

What Went Well:

- Most students get a chance to speak and all students are engaged because they do not know who is next.
- All students have an opportunity to speak.
- No hands up approach.
- Less teacher talk.

Even Better If:

- Students have more time to pause as it allows them to think about what to say. Teachers usually find this difficult. I usually try to give 30 seconds to a minute.

**Kahoot**

This is an app that you can set up for a lesson. I usually use it as a recap starter or a plenary. It allows you to ask questions and pupils can choose from four different responses. They can have more than one correct answer. It calculates which students get the most answers correct. You can set up as many questions as you wish.

This is great for finding out how much students have learnt and finding out how much they already know about a topic.

What Went Well:

- Encourages competition amongst the class.
- Great for AFL and identifying what they know.
- Easy to use.
- Students really enjoy it.
- No hands up.
- Reduces teacher talk.

Even Better If:

- You need the internet to be working otherwise this does not work.
- Sometimes takes a while to load so better to have it already up ready to go before the lesson.
- You need to set this up before a lesson and it works best to have 8-12 questions.
How well did we achieve our aims?

A variety of questioning techniques were explored and evaluated. Students responses were stronger with more developed ideas which was evidence in their responses to the exam question. Their vocal in class responses were very detailed and critical when discussing how slums might be improved questioning fellow students’ responses with comments like; ‘would that actually improve the slums? How?’ ‘Why would that be a benefit to the people living in the slums?’ and ‘Don’t the people want to just keep it the way it is? After all they have a great community spirit and they are happy. Why change things?’ They were able to debate their ideas which reinforced critical thinking and encouraged further questioning.

What was the impact on pupils?

Students had more autonomy and they were more passionate about the subject matter as it made them think about the topic in greater detail. It enabled students’ to think more critically and deeper about the topic.

Other outcomes

Questioning is on the whole school improvement plan and the techniques discussed above support this; I will share with colleagues at after-school CPD session in the Autumn term.

This project had a strong and important impact on my teaching. It helped me to think more critically about planning lessons ensuring I had more questioning techniques to encourage student participation and got them to develop ideas further. It introduced students to think more critical about different sources of evidence as they can be subject to bias.

Other teachers will learn the techniques used and would be able to apply them to most subjects across the curriculum. In Geography the application of inference would be learnt as it is more of a History technique. It would allow teachers to identify students’ perceptions and give teachers a clearer idea of their ideas.

Download

- [Dharavi lesson plan](#)

School context, colleagues involved

Kath Hutchinson (Director of CPD and Head of the Humanities) supported me with the ideas and allowed me to teach her year 10 GCSE Geography Class to conduct the research.

Carrie Carter, Geography Teacher and Assistant Post 16 and Careers Co-ordinator at Chesterton Community College.
Using critical thinking to underpin enquiry: Christ the King Catholic High School and Sixth Form Centre, Merseyside

What did we want to achieve?

We wanted to:

- challenge students' perceptions and ideas of prior geographical knowledge;
- improve student enquiry skills with looking at data and facts;
- engage learners within a topic.

How did we go about it?

I embedded critical thinking in our curriculum assessments, setting a question i.e. 'Could the earth experience another ice age?'

Students were asked to engage with fact cards - adapted from debate.org or various websites to include a range of facts, opinions and graphs. Students had to organise each piece of information into either fact, opinion, for or against, whilst identifying bias within the evidence.

Using the information gained they were then asked to structure their understanding into a writing frame, linking in both sides of the arguments as well as what the believed were facts, opinions or biased information. We then completed the task by writing this up as an extended piece of writing.

How well did we achieve our aims?

- Students were engaged with the topic as it challenged their prior knowledge - 'an ice age cannot happen as global warming is making our planet warmer'.
- The fact cards provided challenged pupils not to take information at face value and to question the reliability of sources of information and groups of people who provide the information. This seemed to challenge more able students - which was unexpected.
- When discussed as a department we found the need to embed critical thinking further in order to boost students enquiry skills. As we believe this will be more valuable when tackling new GCSE questions - we are thinking of expanding this approach in the future.

What was the impact on pupils?

- Students were engaged with the topic and it also allowed synoptic links to be drawn between glaciation, weather and global warming.
- The quality of extended writing was much more in depth with the structured writing frame - but it may be nice to challenge more able students to create their own structured writing frame in the future.
Other outcomes

I believe the quality of my teaching has improved in order for me to challenge student perceptions further, as well as making synoptic links between topic a high profile in class. As a department we are going to embed critical thinking into a range of assessments, in order to challenge students understanding of topic/topics further, in order to prepare them for new GCSEs. I think others will learn from this practice that when teachers take risks in a lesson it is very rewarding when students are challenged and engaged, as long as it is deliver at the light level.

Kelly Peppin, Second in Geography, Christ the King Catholic High School and Sixth Form centre
Focus thinking for Key Stage 3: The Cooper School, Bicester

What did we want to achieve?

After attending Day 1 of the course I decided that I wanted to introduce higher order questioning and encourage critical thinking in Key Stage 3 geography classes. We wanted to encourage deeper thinking, developing from the BIG picture and developing a focus – using a focussed question technique.

How did we go about it?

Using the current lesson structure where a BIG question is posed at the start of each lesson, the teacher then indicates the three mini focus questions where different activities allowed the students to work out the answers. I wanted to encourage the students to create their own three mini focus questions from the BIG picture.

I planned to introduce the idea of a funnel and how it can be used to represent an idea getting smaller and more focussed. Then I planned to introduce specific stages of reducing and simplifying. At each lower stage, meaning must be maintained by linking to the previous stage.

As they got used to the idea, I varied the number of stages (and what students are required to do) based on the level of challenge and the nature of the Thinking Prompt (this is a work in progress for Year 9s). It is possible to reverse the thinking, using fewer prompts at the start and asking them to think more deeply to develop their answers, in this case develop their ability to create questions.

How well did we achieve our aims?

Firstly we gave the children examples of how to critically analyse the BIG picture and then helped them to ask as many possible questions using the questions starters. Higher order sentence starters and questioning stems are displayed in each classroom and children were encouraged create their questions using these primarily, with the aim to progress to creating them on their own as they move through the key stage, using Bloom’s taxonomy.

I found that the first questions the students asked were quite basic and often didn’t answer they big question in enough depth. They then realised that they need to think more deeply about the questions they were asking in order to find out the answer or it could lead to subsequent questions.

What was the impact on pupils?

- Year 7 – The importance of Bees: students asked clear, but basic questions
- Year 8 – Why we have more stuff: students found creating basic questions relatively easy
• Year 9 – Extreme Environments: students started off with basic questions and then gradually developed confidence to ask more detailed questions by thinking about the type of answer they wanted to achieve.

To improve the questioning techniques used by the students, I would introduce the window thinking technique (introduced on the course) to add another dimension to the level of thinking and the process taken to gain the answers they need.

Rebecca Newing, Geography Teacher, The Cooper School, Bicester (Secondary)
Using two new methods to encourage critical engagement of students on the topic of climate change: Hills Road Sixth Form College, Cambridge

What did we want to achieve?

The goal of this practice was to plan and execute a new lesson in an existing scheme of work for A2 F763 Global Issues OCR Geography. The need for this lesson was due to a sense of probable apathy and disinterest in the topic by students in previous years and an apparent lack of curiosity in the subject material by students.

How did we go about it?

The lesson used two new and transferrable elements which engendered a sense of expectation and curiosity.

Element 1: Students were asked to vote with their heads down (so they could not see how others were voting) at the start and end of the lesson, to express their opinions on four initial statements. The same four statements were shown and votes were taken. There was then a discussion based around the Climate Change Deniers video which was shown in the first part of the Connecting Classrooms training day (https://www.youtube.com/watch?v=gjVjr-qOpNk)

Element 2: Students were shown a 15 minute video (Chasing Ice – how it was made https://www.youtube.com/watch?v=wE4ynZB0Wj0) and then the text of video was split into clear statements. Students had to decide if these statements were fact or opinion. They then had to generate questions about the statements which they had read. Then students were asked to go and research the answer to two of their questions. The intention was for them to have time to feedback on this at the start of the next lesson.

How well did we achieve our aims?

The results of the lesson I found interesting as they showed that in fact, contrary to my belief most students were interested in climate change and all were interested after the lesson. This I found astonishing as it was not my perception of the students thinking. The lesson introduced students to the idea that what they read in the news about climate change may be itself influenced by who is funding the research and may be reported on the basis of the research interests, which may, be inclined to stress uncertainty about climate change in the Arctic.
One of the biggest effects of the lesson was seen related to this area of thinking that the causes of climate change are disputed, a 28% drop in those that agreed with this statement. This demonstrates increased understanding that the climate change topic and reporting of it may be distorted and therefore affect the action or inaction that individuals/councils and governments take as a result. However, those agreeing that their actions affected climate change also dropped from 36 to only 25 at the end of the lesson. This is a 30% decrease in the belief that is most likely to affect student actions in relation to climate change. As such the lesson could be seen as a bit of a flop.

Using heads down voting, giving students chances to record their questions, discuss their questions and investigate their questions are areas that potentially have transferability to other subject contexts.

What was the impact on pupils?

Student work, as above, showed sophisticated levels of understanding and interest in the subject material of the lesson.

Students were expectant and curious as the lesson started in such an unusual way for them, there was a sense of enthusiasm and interest in the whole lesson and students were interested at the end of the lesson as to how their views had changed.

Other outcomes

These two new elements were disseminated in two settings. On 7th June 2016 the College held a learning fair and these teaching ideas were shared with Geography colleagues. Then other colleagues from other departments also visited the Geography station and considered applicability into other discussion topics. An English teacher I spoke to could immediately see the transferability of this idea and apply it to the new A level English scheme of work.
I became aware that it is often the case that the teacher guesses what the students are thinking rather than asking them what they are actually thinking. I realised that my perception of what they were thinking was completely divergent to their actual views. I realised that a profound way to get students to think is to value and take polls as to what their views are, rather than start a topic with a standard series of definitions such as ‘What is the Greenhouse Effect’. I also became aware that a simple vote at the start of the lesson had the potential to transfer the ‘power’ in the lesson to students and empower them to complete and discuss in the rest of the lesson.

Thank you for the opportunity to reflect and experiment and to encourage critical thinking in creative ways.

Julia Thomson, Teacher of Geography, Hills Road Sixth Form College
Asking deeper higher order questions in geography: Hitchen Girls School, Hitchen

What did we want to achieve?
The focus adopted was asking deeper higher order questions. The Five Ws are already well embedded within the geography curriculum. At Key Stage 3 they are often used as a starter activity to encourage thinking outside the box, to interpret a photo or image or to set the scene or context. The introduction of deeper questioning/questions is aimed at encouraging pupils to build upon their existing “structures” and think more effectively and understand issues in more depth. They would then be more equipped to think more synoptically and consider more than one side of an issue. This would provide them with more building blocks to use deeper questioning skills to investigate issues and develop more critical independent thinking at Key Stage 4 and Key Stage 5 – essential with the introduction of independent investigations at A Level.

How did we go about it?
The department concentrated on the development of higher order questioning at Key Stage 3 using question stems such as ‘If, What, Might, Will, Should, Could and Can…?’. These were initially used as plenary activities and later embedded in main activities and classroom discussions. Pupils were also encouraged to write their own questions on post it notes that were posted to another pupil whose homework task was to provide an answer. This sometimes led pupils to further research the issue or a consideration of other peoples’ viewpoints or the wider consequences of the issue. Pupils enjoyed receiving the answers and sharing their feedback. Interestingly, pupils’ initial attempts to pose questions sometimes veered back to the Five Ws as they could think of these quickly and so they had to think hard to get started. Some of the questions posed were closed questions and so this is an area for future focus. Year 7 have begun to differentiate between closed and open questions and their use so this will act as a future baseline.

Further use of these higher order question stems could be used to challenge pupils to focus in more depth on implications and consequences of an event or issue.

What was the impact on pupils?
Pupils enjoyed the challenge of creating questions and receiving feedback. The resulting peer and class feedback/discussions on the issue covered future scenarios and alternative geographical futures. In peer and class feedback it supported the weaker pupils in their understanding of an issue and to begin to see the wider context. More able pupils could be challenged to think of the relative importance of questions. Engagement and thinking has been enhanced and the image framework we have devised for these higher order questions can easily be used across topic areas and key stages. We are able to easily change the image stimulus and so planning time for these tasks is relatively short.

Download: Hitchen Girls School asking questions

Ann Jarratt, Hitchen Girls School Geography Department.
Developing evaluation and analysis skills in A level Geography essay writing using critical thinking techniques: The King John School (Benfleet, Essex)

What did we want to achieve

To encourage Year 13 students to think more critically about essay titles and improve how they evaluate within essays. The current OCR specification assigns 17 out of 30 marks in an essay to analysis and evaluation, so the emphasis on these skills is a lot more than students have ever experienced before. Some students found it easier to pick up than others, and those who were struggling were getting disheartened by their lack of progress on essay marks. A new approach was needed to support those students in improving evaluation and analysis.

How did we go about it?

Students were given an essay title and asked to identify individually what the question is actually asking. They fed back to each other and as a class we identified the two sides to the argument in the essay. The class was then divided into two groups – each group taking one side of the argument. They worked within their groups for 15 minutes to come up with the key points for their argument and evidence/examples to back up each point. They then each paired up with someone from the opposite group to argue their point. The other student was encouraged to use the question bank to peer assess the points made. From this point, students wrote a paragraph of the essay (using the PEEL technique – point, example, evaluation, link back to the question). They had to use the previous tasks to develop the evaluation of the point made.

This was repeated a few weeks later with another essay title, however this time silent debating was used to argue the opposing points and question them.

How well did we achieve our aims?

The aim was generally achieved, though at varying paces. Some students found this worked for them after trying it for the first time; others needed a little practice for it to impact on the quality of their essay writing. Exam results in August will really show what was achieved.

What was the impact on pupils?

Students were engaged with this as it involved working with other students in the class. When they feel that their understanding of what to do with an essay title is improving then engagement improves as they see their won progress. It most students more confidence going into the exam. Final impact will be shown in exam results!

Other outcomes:

Doing this project helped to focus my teaching on exam technique and the important skills needed, rather than just content. Seeing the impact on students and their confidence growing gave me more faith in my teaching skills.
The project has been shared within the geography department in a department meeting and will be shared with other staff through a “development time” session with staff can sign up to. This can enable them to develop critical thinking and therefore evaluation skills within their own subject areas.

**School context**

King John School is a large comprehensive in South Essex. It has 2000 students with more than 400 of those in sixth form. It was judged outstanding at the last Ofsted.

Hina Robinson, Geography Teacher, The King John School (Benfleet, Essex).
Promoting independent learning through critical thinking in geography: Maidstone Grammar School for Girls

What did we want to achieve?

In our new Key Stage 3 scheme of work we tried to include some aspects of independent learning for each year group in order to help stretch and challenge learners (this was also after learning about the concept of 20% time in a G&T training session). However, this was spectacularly unsuccessful with students producing poor quality work. In order to address this we decided that two things would need to happen:

a) students needed training in how to be independent learners and  
b) they need some structure in how to go about it.

One of the sessions ran by the British Council / GA proved to be exactly what we were looking for “Questions for critical thinking” which is a question bank to support developing pupils’ abilities to think critically and improve their own use of questions in geography investigations. We decided that students’ at all key stages needed further support in this area.

How did we go about it?

1) We focused on getting Key Stage 3/4 students to think about questioning by using some of the questions from the question bank (Which questions do I need to ask? Which other questions could I ask? Which are questions are most useful? Which are most important?) and also the Q matrix to encourage students to use high order questions.

2) We focused on getting Key Stage 5 students to consider the sources of their evidence (Where is this information from? Who produced it and why? What is fact and what is opinion? Is it fair? Is it biased? What has been left out? What other evidence would be useful? Which other evidence should we see?) for their 70 mark research report essay.
3) We focused across all key stages on *Thinking about reasons* (What reasons are given? What reasons did we think of? What arguments could I use? Which are the best arguments? Are there any arguments against?). (This is also tied into a cross-curricular / enrichment theme of “What makes a good argument that was delivered to Year 8 students). We looked at how students could improve their analysis e.g. of river data / collected from a fieldtrip / causes of flooding in Y7; of their rainforest creature project in Year 8; of the causes of deforestation in Year 10; of comparing and contrasting economic opportunities in a rich and poor part of the world in Year 11 and of the contrasting impact of tectonic activity of the physical landscape in Year 13.

**How well did we achieve our aims?**

As a department we have tried out these strategies. We have used questioning for starter activities and when thinking about a new topic or resource. We have worked with Year 13 students when compiling a research folder of examples of tectonic hazards to consider the reliability of their sources of evidence and they have used this to write up their methodology section of their 70 marks research essay. We used the thinking about reason questions to try to improve students’ analysis of resources and the analysis section of investigation write-ups and essays.

**What was the impact on pupils?** (e.g. achievement, engagement)

1) Pupils were able to work in pairs or small groups and also independently to devise their own questions about photographs, for example, of different types of volcanoes or shanty towns. Some students used the 5Ws as a starting point but were able to develop this further using the Q matrix. Some pupils began to stretch their learning by suggesting higher order questions. Some students still reverted to simple low order questions and needed support devising higher order questions.

2) Our Year 13 students showed significant improvement in their methodology section after modelling examples of assessing the reliability of the sources of evidence when researching case studies for their tectonic hazards report essay. Students were able to confidently discuss the reliability, credibility, bias of sources. Some were also able to link the evaluation of the sampling of their resources to the validity of their conclusions.

3) Students have learnt that an argument must attempt to persuade, must have at least one reason and a conclusion through their “What makes a good argument” lessons and they have demonstrated that they can apply this idea to geography. Students were able to discuss several reasons for issues such as flooding and deforestation and some were also able to discuss which reasons were the most significant and why. Students also demonstrated that they could consider both sides of an argument when debating whether Antarctica should be developed for is resources or whether it is acceptable for Malaysia to cut down its rainforests. The focus on reasons also helped students to analyse unseen resources such as graphs and maps in a more logical way.
Other outcomes

- Our teaching has been altered to incorporate these strategies, for example, embedded into PowerPoints and schemes of work.
- The practice was shared with colleagues through schemes of work and lesson resources and through discussion at department meetings.
- Any of the strategies are worth a go and even though you might not see immediate benefit or progress it is worth persevering with. It might not help all students but we found it did help a significant proportion. Some higher ability students can feel a bit stifled by being asked to do something in a specific way but my argument to that was to give it a go and then when they had understood the technique they could adapt it to suit or suggest an alternative they were more comfortable with. This could even lead to other teaching and learning suggestions coming from students that could be shared by other students.

School context:

Maidstone Grammar School for Girls is a 1-18 selective 6 form entry girls’ school with boys in the sixth-from. The department consists of three full time specialists plus two part-time non-specialists.

Emma Milne, Head of Geography, Maidstone Grammar School for Girls.
Developing questioning at the heart of all lessons: Mary Webb
School and Science College

What did we want to achieve?

- To improve questioning by staff and students.
- To deepen student understanding.

How did we go about it?

We focused at first on staff questions. Each lesson’s title / learning objective were posed as a question across Geography lessons, which all students must answer during or at the end of the lesson, frequently leading into a homework task. Staff then created differentiated questions for each lesson. A ‘no hands’ policy was used in lessons to allow staff to direct questions to individuals. The 10 second rule was followed, then if the student struggled to answer, we allowed the rest of that table to answer. Blooms taxonomy and ‘Thinking Dice’ (also laminated paper versions of the dice) were used widely by staff. Students were encouraged to take risks, to leave their comfort zone and ask challenging questions, which they did not know the answers to.

Images and sources were used widely for students to study and to generate questions. Model examples were used to help. At first they were given questions to answer based on their prior knowledge e.g. floods in Shrewsbury. Then they were asked to generate five of their own questions about another image of flooding. We stressed the importance of not having to know the answers to their questions. Again we used the Thinking Dice with students to promote challenge. For homework they swapped questions and had to answer each other’s questions, which caused some excitement and interest. The responses were diverse; showing that the students did think more and more widely, they challenged their own perceptions and they showed a broader and deeper understanding of the topic.

Recently we have used the GA ‘Question Generator’ sheet in Geography lessons at all levels to help students show a deeper understanding of topics and issues by generating challenging questions about topics they have studied or were to begin studying.

How well did we achieve our aims?

- The quality of questioning by staff and students has improved significantly.
- Understanding has improved across the range of abilities, especially the least and the most able.
- Greater challenge in lessons and homeworks, using the ‘Home Work Takeaway’

What was the impact on pupils?

- The quality of questioning by students has improved significantly. Students are much more at ease asking questions and using a variety of sources across Geography, History and RE.
- Understanding has improved across the range of abilities. Students are thinking more critically and maturely about sources, topics and issues. They are comfortable
at setting challenging questions, as they understand it is a powerful tool to help them to understand and achieve.

- Students are more inquisitive when presented with evidence and sources.
- Discussion and oral work has improved too.

Other outcomes

- The quality of questioning by staff has improved significantly. It is established as a classroom routine. “Talk time” is much more focused in lessons. I view my lesson planning differently with questioning at the heart of each lesson.
- Each lesson’s title / learning objective is posed as a question across Geography, History and RE lessons.

I shared practice with colleagues within the Humanities department day to day, at department meetings, middle leaders’ meetings feedback to lesson observations for next steps in teaching and when I was observed by SLT.

Questioning must be at the heart of good teaching and learning. Staff should allow students to pose questions, even if staff do not know the answers. There is still work to be done within our subject, department and the whole school; questioning is a whole school improvement target for 2016-17.

School context:

We are a comprehensive, non-academy rural 11-16 school in Shropshire.

Peter Lee, Head of Humanities, Mary Webb School and Science College.