Critical thinking and problem solving in global learning; reporting school-based practice.

Several hundred teachers have been taking part in CPD to develop their understanding and practical strategies for critical thinking, part of the British Council’s Connecting Classrooms Programme. A key element of the training is that participants put aspects of the course into practice in their classrooms, review the outcomes and impact on pupils, then share their findings with other course members, and schools. These reports are a sample of the projects undertaken by teachers which have focused on a range of approaches to critical thinking applied in the context of global learning, and demonstrating the impact on their pupils’ learning. There are examples of schools’ international Connecting Classroom projects here.

Primary schools

A. **A Window into critical thinking**, Beech Green Primary School, Gloucester (sustainability).

B. **Developing critical thinking in Year 6**: Central Park Primary School, Newham (sustainability).

C. **Pupil-led questions about refugees**: Charter Primary School, Chippenham (interdependence: refugees).

D. **Using critical thinking as a line of enquiry to explore the sustainability of our school**: Dacre Braithwaite Church of England (VA) Primary School, North Yorkshire (sustainability).

E. **Critical thinking in Year 4**: Durdan's Park Primary School (interdependence, sustainability).

F. **Children asking questions**: Fleckney Church of England Primary School (sustainability).

G. **Can we talk about it…?** (critical thinking about values in Year 6) High View Primary School, Battersea (interdependence).

H. **Enabling Year 6 children to engage in controversial issues through critical thinking**: Lavington Park Federation (interdependence: refugees).

I. **Exploring the use of images to promote critical thinking**: The Mount School, Wakefield (poverty and development).

J. **Using the rainforest to encourage critical thinking**: The Raglan Schools, Enfield (sustainability).


L. **Using critical thinking to analyse data**: Thelwall Junior School, Warrington (development).

- **Discussion** about critical thinking and global learning.
Secondary schools

M. **Developing questioning in geography**: Bishop Justus C of E School (interdependence and globalisation).

N. **Critical thinking about data in geography and mathematics**: Bourne Grammar School (poverty and development).

O. **Decision making skills in GCSE geography**: Central Foundation Girls School, Tower Hamlets; (development).

P. **Exploring questioning techniques to support critical thinking and develop ideas**: Chesterton Community College (sustainability).

Q. **Critical thinking about migration**: Churston Ferrers Grammar School, Torbay (interdependence).

R. **Incorporating critical thinking questions into Year 7 formative assessment**: Falinge Park High School, Rochdale (sustainability).

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

T. **Asking deeper higher order questions in geography**: Hitchin Girls School, Hitchin; (globalisation).

U. **Using infographics to facilitate Key Stage 3 independent learning: Year 9 Development topic**: Roundhay School, Leeds (development).

- **Discussion** about critical thinking and global learning.
Global learning in primary schools

A Window into critical thinking, Beech Green Primary School, Gloucester.

What did we want to achieve?

I wanted to:

- improve children’s ability to contribute to our school community
- encourage children to think critically about what they see and are told
- respect and build on the views of others
- become more aware of different approaches and perspectives.

How did we go about it?

I shared the book Window¹, asking children to make observations about what is happening and respond to inferential questions. The children also began to pose their own questions and deduce what has happened. They questioned each others’ responses and at times also realised there was no right or wrong answer.

How well did we achieve our aims?

Children became more open to responding to the views of others and began to integrate these alternative perspectives into their own opinions. Initially they found it bewildering that there was not always a right and wrong answer, but then became more accepting. The deductions that the children made from looking at the images showed that they were beginning to think critically about the pictures and their initial thoughts. All children became actively involved in the conversation and continued to build upon this discussion at a later time.

What was the impact on pupils?

Children became more confident in sharing their ideas; they developed their communication and language skills, showing their ability to listen to others, respond to what is being said and speak clearly in front of larger groups.

Other outcomes:

I will encourage children to engage in more opportunities for discussion when they can explore new topics and critically respond to what they are finding out. Information was also shared with our GLP network, showing that critical thinking can be embedded in Reception under the communication and language area of learning.

Philippa Owen, Reception teacher, Beech Green Primary School, Qedgeley, Gloucester.

¹ Window, by Jeannie Baker.
Developing critical thinking in Year 6: Central Park Primary School, Newham

What did we want to achieve?
I wanted to enable children to question their own views and thoughts on a topic and to develop an understanding towards other people’s perspectives. We also wanted them to develop their higher order questioning skills.

How did we go about it?
Our topic for geography was the Amazon Rainforest, so we conducted a few lessons which explored the background of this topic. We researched the environmental factors and physical and human impacts it had. Children also had a keen interest about the indigenous tribes and the impact on them.

Within the lesson we had spoken about how destroying the Amazon Rainforest has advantages and disadvantages and this is where the critical thinking developed. The children had previously researched and were aware that there were benefits of deforestation, but their opinions on the subject were very one sided. Children were asked to research the ‘for’ side of deforestation and so were given Bloom’s Taxonomy questions to create their own questions about areas they would like to find out more about. Examples of these questions were: Who makes the decisions about deforestation? Why do people have different views on this? Does anyone have more influence or power? What are facts and what are opinions? Lower ability children were given questions whereas more able children created their own. This research allowed children to have a balanced knowledge of both sides.

Next, we began by discussing the topic and looking at the ‘for’ and ‘against’ of deforestation. Children carried out a debate within small groups and spoke about how rebuttals could be used to create a counter argument. This helped orally practise their thoughts and ideas as well as listen to other’s ideas. Children finally used the enquiry framework to write up their balanced argument using all the knowledge and information they had gained from the lessons, higher order questions, research and debates.

How well did we achieve our aims?
Children thoroughly enjoyed learning about this topic. They thrived when creating their own questions to research as this gave them a focus to their learning instead of it being a stream of useless information from the internet. They also enjoyed sharing new pieces of information which they previously didn’t know. During the debate it was observed that children who generally didn’t like to participate were keen to share the points they had found or present a counter argument to someone else’s view point. The outcome piece of writing produced was at a very high standard as children were so well educated on the topic that they relished sharing all they had found out. They were able to use a vast range of sentence starters such as: ‘It is believed’, ‘The research suggests’, ‘Some people suggest that’, as well as many other grammar and spelling objectives linked with English.
What was the impact on pupils?

This was a very good opportunity for children to consider the viewpoints of others and to look critically at why things happen. The higher order thinking questions made the learning purposeful and ensured that children were looking for relevant information. Children seemed more engaged when they were allowed to pose their own questions and carry out their own research, it also improved the argument they presented as PEEL\(^2\) was used when writing.

I hope to use this sort of questioning and enquiry based learning in other areas of my teaching, it may also help make cross-curricular links like in this study. I will also be beneficial to share this practice with others and help develop it across the school.

Rajinder Puaar, Year 6 class teacher, Central Park Primary School, Newham.

Pupil-led questions about refugees: Charter Primary School, Chippenham

What did we want to achieve?

Our school is aiming to raise the standard of questioning in use by both the teachers and the children. We are also increasing the amount of child-led learning taking place. Our children are very happy to learn what we have to teach them, but rarely raise questions outside of the theme being covered. We try to include current affairs in aspects of our resourcing, but have found that the children aren’t real thinking deeply or in a critical manner about what they are presented with. We want our children to question, question, question, but we also want them to pursue answers independently and to understand that they are the leaders of their own learning.

How did we go about it?

My Year 6 class have been asking about the refugee crisis for quite some time now so when I asked them to choose the theme for this term it came as no surprise when they asked to learn more about the on-going situation and what it means for us.

The class worked in groups, then in pairs, and finally individually to create questions based on the theme of Refugees. We heard them all and then worked together to build a starter question and a number of other questions which would direct our learning. Our opening question was asking whether it is Britain’s responsibility to help the refugees.

\(^2\) Point, Evidence, Explanation, Link.
We agreed that in order to come to a decision about our country’s role and responsibilities we had first to analyse what exactly our country comprises of. The class worked as small groups to answer questions such as, what is Britain? And to whom does Britain belong? It quickly became clear that there is no one answer to these questions and that the wide range of answers in the class may be an example of the wide range of truths about Britain. As such, the children thought it was a good idea to start in the past; to understand our present by looking at our recent history.

The Traces Project is an amazing site which has a timeline of artists who live and work in Britain but who arrived here as refugees. The children worked in pairs to research an artist and produce a piece of writing about them. These were then displayed as a timeline and the children realised that by tracing the origins of these people we are able to trace the history of conflict around the world.

All of the class agreed that Britain today is made up from a history of people arriving on our shores and we are a better place for it.

At this point we returned to the question of today’s refugees. We turned to the book The Arrival by Shaun Tan. The children analysed the images on the first couple of pages and we talked about what makes home. As part of our English lesson we are building dialogue into narrative. We took the page with the mum and dad packing the suitcase, and the page with the little girl saying goodbye to dad, and we carried out hot-seating to begin to empathise with the characters and their situation. We asked what circumstances would possibly drive
someone to choose to leave their family and their home? The hot-seating enabled the children to really get into the mindset of the characters; as a result they wrote detailed narratives which reflect both the spoken and unspoken language which would surround such a situation. Observing the empathy demonstrated by the children has been a real privilege for me and has given me an insight into their characters which wouldn’t ordinarily surface in a classroom setting.

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

During these past few weeks the children have become much more careful in their thinking, more active in their consideration of questions which previously would have been met with either rapid shallow answers or sometimes just a shrug of the shoulders.

We still haven’t answered our initial question about whether it is Britain’s responsibility to help refugees. The children have been asked whether they are ready to come to a decision and all agree that they need more information. They have asked to look at maps to find out where the refugees are coming from and where they are headed. It has been interesting because already the class are saying things like, ‘We will have to be careful where we get the information from, because some people use it to lie.’

**What was the impact on pupils?**

This project has opened up so many doors both academically and philosophically for the children. It has been good to see that when they are asked to get into groups they are beginning to actively seek out not-their-usual-friends to work with because they want to get different opinions.

I don’t honestly know where this project will take us: that’s up to the children. But I know that while they know they’re in the driving seat they will take the learning seriously and will invest time and effort into it. As a teacher that’s exactly what I want to see.

**Download**

- Presentation: what makes our culture what it is?

Claire Coverley, Charter Primary School, Chippenham, Wiltshire.

**Using critical thinking as a line of enquiry to explore the sustainability of our school:** Dacre Braithwaite Church of England (VA) Primary School, North Yorkshire.

**What did we want to achieve?**

Our aim for this project was to enhance our children’s critical thinking skills, with a particular focus on asking questions. We wanted the children to gain confidence in raising their own questions and discussing these with the hope of deeper thinking taking place in the classroom.
Our school project was also linked to our eco focus which was to explore the impact that we, as a school, have on the environment and to consider how we could reduce our carbon footprint and make our actions more eco-friendly.

How did we go about it?

The children initially explored an info-graphic based around sustainability. This led to discussions, both in groups and as a class, which encouraged the children to naturally raise questions. Not long after this, questions about our sustainability as a school were raised by the children, which they were very keen to find answers too. Some of these were:

- How far away does our food from? What impact is this having on our environment? How can we reduce this?
- How can we encourage more wildlife to our school?
- How can we reduce the amount of electricity we use in school?
- How can we reduce our carbon footprint when we travel to school?
- What improvements can we make to the school grounds to improve our carbon footprint?

Due to their enthusiasm and interest, we decided to act upon the questions the children raised during our critical thinking/geography session and planned a whole school ‘Sustainability day’ where the children worked on a variety of different activities. Each activity focussed on one question the children had raised with the intention of them exploring these further and generating their own answers and solutions through enquiry.

How well did we achieve our aims?

Our ‘day in the dark’ sustainability day was a great success and really encouraged all of the children to engage in meaningful discussion and provided lots of opportunities for deeper thinking throughout the day at all levels, ranging from Reception to Year 6. The children were completely engaged as the whole concept of the day and even the foci of each session were based upon the initial questions they raised during lessons. The activities we conducted for each question raised by the children has been highlighted below.

1. **How far away does our food from? What impact is this having on our environment? How can we reduce this?**

   In groups, the children were asked to find the food labels which were scattered around the room. They had to identify which part of the world this food was grown in and then plotted this information onto their own version of a world map. After this, the children further discussed how we have access to some of our food through imports and how they arrive in England. The children also explored ways in which we could reduce our food air miles by maybe growing some of our own crops in school and using local produce.

2. **How can we encourage more wildlife to our school?**

   The children were very proactive and decided to make many different features such as bird feeders and bug hotels in order to attract more wildlife into our school grounds. They also got involved with some gardening in our school wildlife area.
3. **How can we reduce the amount of electricity we use in school?**

The children did a survey of the school and the electrical appliances we use on a daily basis. They discussed which items they felt were important which we needed in school and also explored the possibilities of reducing our use of some other electrical items. The children also took a meter reading at the beginning of the day and compared this with the reading at the end of the day after we had a ‘day in the dark’ where no electricity was used for the whole day. They then compared this reading with that of a normal day and worked out how much of a difference this made to our energy usage and our school electricity bill.

4. **How can we reduce our carbon footprint when we travel to school?**

Each group plotted their houses on a map of the local area and we also identified where school was. They compiled a list of the children who all lived in the same village. They were very shocked to find that lots of children were travelling from the same villages, at the same time, to the same location every day. They discussed what kind of impact they could be having on the environment by using so many cars and decided to take action! The children created posters promoting car shares which are to be displayed around the school for parents to see. Some children are even in the process of writing letters to inform parents of what they discovered during this session and some of their ideas to reduce the number of cars travelling to and from our school every day.

5. **What improvements can we make to the school grounds to improve our carbon footprint?**

The children drew their own maps of the school grounds (expectations differed depending on the age of the children) and conducted an outdoor survey of our school grounds. They identified areas which they felt needed improving and how this would impact our sustainability as a school. Some areas included our wildlife area, some of our drainage systems and our outdoor lighting system settings. This activity promoted some fantastic discussions where the children challenged each other’s ideas and really supported them in effective deeper thinking.

**What was the impact on pupils?**

Our critical thinking sessions have had a significant impact on our children’s confidence in raising questions and both discussing and building upon each other’s ideas. They are able to raise questions based around many different prompts, such as info-graphics, and are doing so with increasing independence.

With reference to our sustainability day which was a result of the children’s critical thinking, they have become much more aware of the impact our daily actions can have on the environment and have supported each other in the process of developing answers and solutions to their own questions. As a school, we have seen a significant enhancement in the children’s deeper thinking skills and hope to continue supporting them in developing these skills through further critical thinking opportunities.

**Other outcomes**

As a result of this project, I personally feel much more confident in incorporating critical thinking into my lessons to encourage and promote deeper thinking across the curriculum. I will continue to plan critical thinking sessions within my teaching as the children are always
engaged, make fantastic contributions and share great insights which often develop their
own and other children's learning.

I have shared some of the key messages and ideas from this critical thinking course with my
colleagues and they have also been planning some opportunities for this with their own
classes. As a staff, we organised and conduced our sustainability day which we all felt
benefitted the children’s deeper thinking skills.

Overall, critical thinking activities within our school have had a significant impact on our
children’s learning. We are very impressed with how it has supported them in developing
confidence in raising questions and how it has promoted high quality discussions, leading to
the development of their deeper thinking skills.

School context

Dacre Braithwaite Church of England (VA) Primary School is a small, rural school located in
Nidderdale, an area of outstanding natural beauty. All of the staff at this school were
involved in our sustainability day which was a part of this project.

Emily Bosomworth, class teacher, Dacre Braithwaite Church of England (VA) Primary
School

Critical thinking in Year 4: Durdan's Park Primary School, Southall.

Durdan's Park Primary School is in the first year of a two year visible learning programme
whereby the children are becoming more independent and assessment-capable learners. In
order to develop this further the children need to be able to think more critically about what
they are learning about thus taking them from surface level learners to deeper level thinkers
(and, as such, learners).

What did we want to achieve?

We wanted to use the critical thinking course as a tool for getting our children to think more
critically not only in foundation subjects but across all subjects around the school. This would
enable the children to take charge of their learning which will then lead them to develop a
deeper understanding of what they are learning.

How did we set about it?

To begin to implement this in the school the geography coordinator (myself) decided to use
debating and evaluating sources as a basis in Year 4 for introducing the critical thinking
questions to the children so that they can begin to think more deeply about the topic that
they are debating.

Primarily the children were given a chance to debate whether it was a good idea to build the
Aswan dam in Egypt as this linked in with the topic. During this session the children were
given evidence for and against that they ordered on a good/bad continuum. After the
children completed this task they underwent a debate about this question. This task was
completed completely unaided with no teacher input nor questioning templates for them to
use as a guide.
The second time that we engaged in a debate was World Fairtrade day. During an afternoon we were looking at whether Fairtrade was a good idea or not. This task was aided as we went through the pros and cons together and discussed them as a class and using the critical thinking questions as a guide to help us to think more deeply into the topic and then the children were sent away to create a list of pros and cons themselves and then split into groups and debated the topic.

The final element was to look at sources of evidence. During a climate change session, the children were given three sources of evidences (quotes) from different members of society. The children were first asked what they thought of each quote and then after using the thinking questions to question the reliability of the source by evaluating them.

How well did we achieve our aims?

During the first session where the children used the continuum, some of the children began to form discussions as to why they believed that it should go onto a certain spot on the continuum. These discussions showed the children have already begun to think somewhat critically but needed more modelling/scaffolding in order to get them there. When participating in the debate the children did not quite use some of what they had been looking at and the discussions were surface level answers.

The next session was more successful for the children and this was a turning point for the children's thinking. More modelling of how to use the critical thinking questions began to get the children to begin to question the evidence provided and some even began to think outside of what was provided and more into other elements that Fairtrade could have an effect on. This showed that the critical thinking for these children worked and moved on their learning as well as maturing their attitudes and making them aware of more aspects in their life (but beyond their maturity). This task really challenged what the children originally thought about Fairtrade and because of this changed opinion some began to think about how it can be developed so that it can actually mean what it says.

The final session the children were able to independently able to evaluate the sources using the critical thinking questions to aid them. Once modelled to them they were able to do it more effectively however this whole session once again changed the opinions of the children as what they thought about during the reading of the quotes somewhat changed as they looked at the different reasons as to how their background and actually what they are saying can have an effect on them. They also began to identify why sources are more reliable than others as well.

What do we plan to do next?

The aim is to carry out a critical thinking inset with the staff in the school and give them this as a case study to show the development that they can achieve with their children and ideas of how to implement it into their foundation subject. They will be given the list of critical thinking question templates to assist them in their class and will be expected to complete a task where they use this in.

Kimberely Rowsell, Durdan's Park Primary School, Southall.
Children asking questions: Fleckney Church of England Primary School, Leicestershire.

What did we want to achieve?

We wanted to enable the children to ask questions and find the answers themselves rather than simply give them information. We then wanted the children to use the answers they had found.

How did we go about it?

Our topic was Brazil and the rainforest; we had already taught seven lessons so the children had good knowledge about where rainforests can be found and what they are like. We were due to look at what rainforests give us and the issue of deforestation.

We re-planned the first lesson so that the children had an overarching question: ‘Who cares about the rainforest; does it matter?’ They had to come up with as many questions as they could that they would need to find the answers to before they could answer the main question. They brainstormed questions such as:

- What would life be like without the rainforest?
- What do we get from the rainforest?
- Why are trees being chopped down?
- Are we chopping down more trees than we need?

We then gave them access to information so they could research the answers to their questions. The children came to the conclusion that rainforests do matter but they matter to different people for different reasons.

The second lesson focussed on the children using the information they had found out. They were told they had been employed by the Brazilian government as advisors. They were being asked to prepare a presentation to the government about whether they should allow trees in the rainforest to be chopped down. They had to give reasons for their decision and solutions to possible problems. They were given some statements from various interested parties (such as a cattle rancher, an environmental protester, a member of an indigenous tribe etc) and told they needed to keep everyone happy.

How well did we achieve our aims?

The children needed some prompting in the first lesson to think about what kind of questions they might need to answer because many of them immediately thought they could answer the overarching question; they thought the rainforest only really mattered to the animals and that it should be left alone by humans. However, very quickly, they began to think more carefully and come up with pertinent questions such as those in the previous section. By the second lesson, the children were much more confident at asking questions and thinking for themselves. They were able to apply what they had found out and give thoughtful advice to the ‘government’.
What was the impact on pupils?
The pupils achieved much more than if they had just been told why the rainforest was important. They were far more engaged and able to verbalise their thoughts and opinions.

This experience has had a large impact on my teaching because it has shown me the value of relinquishing ‘control’ and allowing the children to direct their learning. I was still able to steer them in the direction I wanted them to go but they were far more enthusiastic because they were driving their own learning.

As a school, we have organised training for at least two more members of staff to have training in Philosophy for Children and then feedback our experiences to the whole staff.

School context
Fleckney Church of England Primary School is the only school which serves the village of Fleckney and is larger than the average primary school, with just under 400 children on roll. The majority of the children are White British, with a few from other cultural backgrounds. Very few speak English as an additional language. The proportion of disabled pupils and those who have special educational needs is just below the national average, although the proportion who have a statement of special educational needs is well below average. The proportion of pupils known to be eligible for free school meals is below the national average.

Sarah Panter, Year 6 teacher and geography co-ordinator, Fleckney Church of England Primary School, Leicestershire.

Can we talk about it…? High View Primary School, Battersea

What did we want to achieve?
Why we wanted to use talk embed our values. The school motto is Together As One and we are a Level 1 Rights Respecting School who had in the previous year reviewed our school values after the appointment of a new head teacher. As with all changes, there is an opportunity to re-evaluate what we do and improve existing practice. The review of the curriculum with teachers showed that they felt that they did not tackle relevant issues within PHSE and that children often used core subject to bring up issues in the news such as Brexit and the US elections. In September 2016 we also refreshed our school values and are embedding these, term on term. In the term I trialled the critical thinking approaches with Year 6 the value was kindness and the following value is community.

I also wanted to explore human geography, through the economic and governmental structures and other cultural elements that define how or why humans function the way they do in their ‘settlement’ areas. The Year 6 teachers wanted to create a space to explore thinking about our values linked to real issues and ask big questions such as; is society really kind, and can you build perfect communities by banning people or limiting their movement?

How did we go about it?
Year 6 (43 children and 2 teachers) worked over two days discussing immigration, including:
Big Questions: Immigration - should we all be welcome?
Is President Trump right; can American stop Trump: why and how?
The wall (to keep Mexicans out) works: exploring how building walls keep us in as well as out
Silent Debate: why do people immigrate?

Using the on-line platform Spiral AC and video clips, teachers posed the questions in IWB and children responded on iPads so we could see all opinions and answers were displayed. Teachers could then pause and use an opinion and ask deeper probing questions and explore views and values. The platform allowed us to regroup children to further explore other scenarios in teams. We also used silent debate to allow children to just walk around and absorb and comment on each other’s thinking, noting similarities and differences.

How well did we achieve our aims?
The impact on teachers was perhaps the most profound as they felt enabled to tackle issues in an open and inclusive way. As one teacher explained he had felt the issues ‘bubbling’ under the surface but wasn’t sure how to tackle them. Pupils were engaged and once the responses started appeared to refine their thinking and challenge statements.

Other outcomes
The Year 6 teachers will now become PHSE critical thinking ambassadors and use the techniques to explore our school value of community and Brexit. The debates will be saved on the platform and the debates can be launched with others classes across the school collaborating in real time with each other. We will be re-writing the PHSE and geography curriculum to include critical thinking units on controversial issues.

Dona Henriques Deputy Headteacher, High View Primary School, Battersea.

Enabling Year 6 children to engage in controversial issues through critical thinking: Lavington Park Federation.

What did we want to achieve?
The Year 6 teacher and I wanted to enable the new Year 6, in September 2016, to express their own ideas about controversial and topical issues. These issues are a normal part of their homework: our intention was to stretch their thinking to experiment with opinion and critical understanding of topical issues. The class, to this point, found these kind of deeper conversations challenging, so our intention was to open their minds to give their own views.

We also felt strongly that this group of children needed to have the opportunity and the developed skills to express their views about the changes in the world around them. As our children are in a rural school, with predominately white, Christian children, it is vital that they have the opportunity to express and explore deeper issues that they will come across in their future.

How did we go about it?
This initial lesson began at the same time as the children’s work on Remembrance Day. To begin the lesson, we sat in a circle and passed around a poppy from Remembrance Sunday. The children asked the poppy a question, using the format of P4C questioning. As the poppy went around the circle three times, the questions became deeper and more philosophical.

We continued by looking at the Human Rights and British Values statements and words and asked the children their views on these. Children began to express ideas, for example, when talking about Peace: “Most of life isn’t fair, but peace can help by settling differences.” The children continued to debate and order these words, such as caring, knowledge, love, reflect, challenge, death. One child began her debate by stating: “We are challenging ourselves every day to modify our world, think of new ideas to change, maybe things that are not fair and make us think about human rights.” Children then voted on the words that they wanted to explore further.

In the next session, we used the British Red Cross resources on Refugees. We wanted the children to explore their thoughts in a safe environment. The children were given statements that showed the differences between a refugee, immigrant, migrant etc. Two children took the two main roles of being an economic migrant and a refugee and the rest of the class were given statements on cards to place next to the correct ‘child’, for example, ‘I have no possessions’, ‘I liked the sound of the UK’, ‘I travelled under a truck’. We then openly and honestly discussed these deeper issues that these topical and controversial statements brought up. Finally, I asked the children to take each of these statements and order them in order of being ‘good’ or ‘bad’ to a person. This brought up a huge number of major arguments, safely managed, as the children took their statement and placed them on a line on the classroom floor. Discussions about which one of the statements was ‘worse’ showed a much deeper level of thinking, for example, ‘I have no possessions’ versus ‘I am an orphan’. Children gave their evaluation about the concepts on post-its at the end of the session and these showed the deeper thinking that we were hoping for. For example, “I had so many thoughts that I thought I would explode. I had so many words but didn’t know how to put my words across.”

In the third main session, we talked about the changes to the Dubs Amendment, which at that time was in the news. We talked about having a safe space to explore our challenging thoughts about child refugees. The children took the statement from the Archbishop of Canterbury and read it in pairs, ensuring that all children understood this two-page document asking the Government to rethink their lowering of the number of child refugees allowed into the UK. We then completed a new lesson structure, called the Reading Protocol, where each person has 30 seconds (or a minute in an older child or adult) to say their view on the document, with no one allowed to comment or interrupt. This was a challenge, particularly for some of the SEN children who normally struggle to express their views strongly in a verbal format. All children participated; and gave strong arguments to the case. They were given the freedom to take any view and not just agree with the Archbishop, Justin Welby. Following this lesson, the children asked if they could write to the Archbishop and to our local MP, giving their views.

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

Across a series of lessons specifically developed to enable children to safely express their views, the children developed a deeper understanding of controversial issues. They expressed their thinking through a variety of methods, learnt within this course and through
discussion with colleagues, in order to open up their thinking to explore deeper structures of thinking.

These lessons are still ongoing and will develop alongside the maturity of the children as the year progresses. The children have said that they “have worked harder using this way of thinking” and that they like to have questions to which there isn’t a definitive answer.

**What was the impact on pupils?**

The children were always very well engaged; the specific impact was as follows:

- The SEN children in the group were given the opportunity for their view to be explored and expressed verbally.
- The higher achieving children, with whom there is regularly one route or answer, explored the challenge of not having one response and that everyone has a view.
- The children were empowered by these critical thinking strategies so that they felt empowered to write letters to their local MP on several issues.
- Children are beginning to use higher level relevant vocabulary regarding these issues.
- There is a trusting culture within the classroom where views can be voiced openly and there will be no condemnation from peers or adults.
- The children ran the worship on Remembrance Day, based on this and other parallel lessons, which gave them the format and the audience to share their views.
- All children are beginning to develop their skills of critical thinking and can engage with issues that are controversial, topical and sensitive with more personal confidence.
- To use the school values and Christian values to express the issues that concern them on the news, and in the world around them.

**Other outcomes**

The whole project has been undertaken alongside the Year 6 teacher, team teaching and supporting these issues in a safe space. The next stage will be taking this to my Year 4 and 5 children in the upcoming weeks. The impact on my teaching was to bring new ideas of teaching methods into my geography and citizenship issues within the curriculum.

The intention is to share these practices across my own Federation of schools, since this was a successful trial with one year group. We then intend to share these practices with our link school that is already in place through the British Council, in Southern India. My intention is to run a staff meeting to further extend the practice within the school and for other colleagues to trial this method of working. The intention is that staff will be able to provide a safe and discursive structure to lessons, where children can explore their views deeply.

It is also important that no issues are too troubling to explore (for example, the Holocaust and the Kinder-Transport) and that children must be given the space and time to make links across these (for example, to the Dubs Amendment and child refugees in 2017).

This was a very successful trial and is now part of normal classroom routines; the course was very good and extended teaching and learning within my primary school.
School context:
We are a pair of very small schools in rural West Sussex. I began working with the Year 6 teacher and her class of 15 children initially.

Helen Martin, Headteacher, Lavington Park Federation of Graffham CE Infant and Duncton CE Junior Schools.

Exploring the use of images to promote critical thinking: The Mount School, Wakefield

What did we want to achieve?
I wanted to use critical thinking within a geography lesson to challenge the children’s preconceptions; to encourage the children to think about how images can be manipulated and to formulate enquiry questions which we could then investigate.

How did we go about it?
We are studying Africa and I knew the children would have a lot of preconceptions about what Africa is like which I wanted to challenge. I gave them a series of images of Africa, some showing very modern, developed cities and others showing more rural scenes. I did not tell the children what the images were of but asked them to sort them into which were of Africa and which were not and to then write a justification for why they had sorted them in this way. Predictably, the children sorted the cities into ‘not Africa’ and the rural scenes into ‘Africa’. We discussed their reasons before I told them that in fact all of the images were of Africa.

Following this I gave the children different roles such as a company trying to promote tourism in Africa, a government from an African country trying to promote investment, an aid organisation trying to raise money etc… and asked the children to decide which images they would use in a leaflet for their organisation and explain why.

In another session, we looked at an infographic showing poverty levels in different countries across the world. The children scrutinised the map to work out which countries were the poorest and discovered that most of the countries with the highest poverty levels were in Africa. I then asked them to generate questions that they would like to answer. They came up with:

- Why are there so many poor countries in Africa?
- How did those countries become poor?
- How do we know about poverty levels across the world?

How well did we achieve our aims?
After the first session, the children identified that before the lesson they had thought one way about Africa but that after the lesson their opinions had been changed. They said things like: “Now I know there are modern places in Africa,” and “After today, I know that some people in Africa live in cities.”
The activity where the children had to decide on different uses for the images made the children think carefully about why companies and charities might choose certain images in their literature.

When looking at the map showing poverty, the children worked in pairs and really engaged with the task with minimal adult support. They were having lots of interesting discussions amongst themselves mainly about what surprised them. At this point they were already coming up with some interesting questions and observations, for example, one child commented that they were surprised how low the level of poverty in Russia was because it is such a big country and another child realised very quickly that all of the countries in Europe had the lowest level of poverty and wondered why. We had an interesting discussion about what they had found out and all levels of ability were able to contribute. We finally agreed on our enquiry questions for Africa which we will spend the next few weeks researching and trying to reach some conclusions.

What was the impact on pupils?

This project is still ongoing but so far it has engaged all the children in the class. They are interested to know more and to try and find answers to explain why the poverty levels are so high in a lot of African countries. They have shown a willingness to be flexible and change their previously held opinions. I have been impressed by the discussions that the work has generated and also by how most of the discussion has been pupil led rather than needing a lot of teacher intervention. The children have supported each other and used their peers as sounding boards for their ideas. They came up with some interesting enquiry questions but this is an area that I would like to develop further.

Other outcomes

This project and the course in general has made me much more aware of both the types of questions that I ask but also those that are asked by the children and has made me keen to develop both. I will use more infographics and images to promote discussion and as a way in to a topic in future.

I intend to share what I have learnt in a staff meeting where I can highlight the benefits of critical thinking and share some of the ideas and strategies from the course.

School Context

The Mount School is a one form entry Primary school in Wakefield.

Kathryn Sawdon, Year 4 teacher.
Using the rainforest to encourage critical thinking: The Raglan Schools, Enfield

What did we want to achieve?
I wanted to give children an opportunity to think about the rainforest in a different way. Firstly, to think about different sides of the argument about chopping down the rainforest and why some groups may be in favour of this. Secondly, I wanted them to take on a role that may have been different to their own.

How did we go about it?
The class had already had several lessons on the rainforest. I decided to change the final lesson so it had more potential for critical thinking. I started by showing the class a picture of a rainforest that had been burnt down and asked them to say what they thought the picture was of. I also asked them to think about how it made them feel. Then they had to sort cards as to whether it was a positive impact of the rainforest being chopped down or a negative impact. This was followed by a role-play on whether a road should be built through the rainforest. I used WWF resources for this. There were seven groups, local people against the road, logging workers, environmentalists, the logging company, the Government, indigenous people and local people in favour of the road. Each group had to tell the others what their role was. A series of statements were read out, to which each group had to respond to. There were also some secret messages going to and from the logging company and government. The role-play ended with a public meeting to discuss whether the road should be built.

How well did we achieve our aims?
Lots of children really enjoyed the role-play and taking on a role that may well have had an opposing view to their own. Although they found it hard to understand their role and what to do initially, once I had gone round each group and explained they really got involved. There was a lot of good discussions about whether the road should be built, with children addressing each other directly and either agreeing or disagreeing with each other. A lot of good language was used, such as ‘I believe’ and ‘In my opinion’. Lower ability children found the role-play hard and didn’t really say or join in very much.

What was the impact on pupils?
For the higher ability children it was a good opportunity for them to think about different viewpoints to their own. They also could discuss issues in a very open way.

I would definitely reconsider how I plan units of work to encourage more critical thinking. In terms of the whole school, it will need to be introduced slowly. Younger children, whilst having good ideas, can find it hard to express their own or other people’s viewpoints and often find it difficult when there is no right or wrong answer. I would also need to think about how lower ability children could access this work more easily.

Caroline Freedman, Class Teacher, The Raglan Schools, Enfield.
The Challenging Geography of Amazonia: A Year 4 learning challenge project to develop critical thinking: St. Joseph’s Catholic Primary School, Wandsworth.

What did we want to achieve?

Project aim: to engage children in deep learning through the critical thinking strategies using ‘Great questions’ and ‘Silent debates’.

Project impact measures: All children will deepen their understanding of a controversial issue from different viewpoints:

- Move the teacher/pupil questioning ratio from 50:50 towards 30:70.
- All children to deepen their thinking by frequently asking higher order questions. In the light of John Hattie’s table of effects, challenge has a 0.52 positive effect.
- Knowledge and understanding of the controversial activities taking place in Amazonia.

How did we go about it?

The methodology was:

- The involvement of children in a silent debate on deforestation to develop their understanding of the different viewpoints relating to this issue.
- Support the children to ask a higher order questions using high quality images and bird’s eye view video clips taken from drones and helicopters, which add to the pupils’ understanding of the rainforest.
- Encourage the children to critically think, by asking them to use a range of questions which helps them to recap, summarize, explain, predict, infer and reflect about issues related to Amazonia.
- Modelling good quality questioning, in light of the John Hattie’s table of effect size. Questioning has a 0.41 positive effective. Effective questioning involves effective modelling.
- Embedding a culture within the classroom that shows the children that making mistakes is a part of learning as. Such “peer fear” is one of the obstacles to children answering and asking questions.
- Use a variety of critical thinking strategies to challenge and to deepen the children’s thinking e.g. Using lollipop sticks and the technique of pose, pause, pounce and bounce etc.

How well did we achieve our aims?

- The no hands up and the Pose, Pause, Pounce and Bounce Strategies facilitated all the children in Year 4 to experience greater thinking time. As a result, the children felt confident in sharing their thinking before their peers. Embedding the PPBP process was a key achievement. When asking a question to the whole class, then asking an individual to respond – "pose, pause and pounce" technique - allows you to target questions at specific children. The class teacher paid special attention to avoid the pitfalls that researchers have identified, which suggests the lesson is still likely to
centre around six to eight main contributors, who are usually in the teacher's immediate line of vision.

- All the children in Year 4 were introduced to the principles of the silent debate and as a result became aware of the different viewpoints around deforestation in Amazonia. As a result of participating in a silent debate, the children were able to write about one issue relating to deforestation in Amazonia and contribute to a silent debate on the issue.
- In response to high quality images, the children were able to write and carry out their own silent debate around deforestation.
- The critical thinking strategies used in the project enabled the children to think more deeply, ask more higher or questions and as a result enabled them to write a balanced argument for a control on deforestation in Amazonia. Before embarking on critical thinking, the children were not always able to appreciate the complexities associated with deforestation in Amazonia. Most of the children would have been single minded in their view of deforestation.
- The children were asking more questions than the teacher as a result of the critical thinking strategies used in the lessons. Lesson observations indicated that the pupil/teacher questioning ratio moved from 50:50 to 60:40.

What was the impact on pupils?

- Most of the children were able to identify the main human activities that led to deforestation and were able to understand how some of these economic activities supported human life in Amazonia.
- The majority of the children in Year 4 were able to understand how human activity harms the Amazonian ecosystem.
- As a result of the critical thinking strategies, the majority of the children were able to view the issue of deforestation from a number of viewpoints.
- Many of the children were asking higher order questions as a result of having a deeper understanding of deforestation in Amazonia.

Other outcomes

- As a result of the critical thinking strategies used in lessons, the children were more engaged with the subject matter.
- We managed to create a comfortable environment where being right doesn't always matter ensured that it isn't always the quickest and most confident pupils who make those contributions. And whatever line of questioning the teacher chose, the children had to be prepared to do some analysis of how they work. This had a profound impact of the self-esteem of some learners.
- Teachers sought to create a supportive climate so that 'put downs' are avoided and children can articulate their ideas without fear of failure – we thought carefully about verbal and non-verbal reactions and responses.
- Ted Wragg's 1993 research found that an average of just one spontaneous question each lesson came from the pupils, and that was more likely to do with procedure than with learning. We sought to use effective questioning in all sessions. The culture was that questioning isn't a one-way process. If the teacher asks the kind of questions
that stimulate thought and debate, we found there was a strong chance their pupils will also start to ask more. This was a key aim of the project.

- We focussed on developing the appropriate learning culture in the classroom. Having a growth mindset was another key outcome for us, being resilient in the face of frustration and failure; and having the ability to respond well to challenges, believing that effort can lead to success. There were very few simple answers in this project and they had to believe in themselves as learners with their capacity to improve. It was about having a robust self-efficacy in order to shape their attitude, motivation and commitment to learning.

- Teacher talk was kept to a minimum and the pupils took a greater control over their own learning. The feedback students received ensured their understanding the material and was able to correct misunderstandings. Effective questions should aim to further and deepen learning as well as simply help establish prior knowledge.

- The students developed their reasoning skills, as well as the factual knowledge of the subject and practise the skills regularly.

- Talking partners were changed regularly and random pairings appeared most effective.

- The clarity of feedback was another key element to the project. I followed ‘process orientated praise’ method. This is focussed on the process required for success. For example, praise the student's effort and strategy, e.g.: ‘You really tried hard’; ‘That was a good way to do it’. Carol Dweck believes that this sells the idea that esteem comes from striving and from the use of effective strategies. It teaches students to understand setbacks in terms of lack of effort, or inappropriate strategies and allows each student to earn praise.

Michael McCarthy, St. Joseph’s Catholic Primary School Wandsworth.

Using critical thinking to analyse data: Thelwall Junior School, Warrington

What did we want to achieve?

 Our main aims were to think critically and develop awareness of the complexities of the socio-economic status of South American countries, in comparison to the UK, and to enhance/support our current geography topic of ‘South America’.

How did we go about it?

Pupils worked in mixed ability pairs to select one South American country to study alongside the UK. We used www.gapminder.org and tracked GDP per capita against life expectancy from 1800-2015. Pupils plotted line graphs to show the relationships of the data over time.

Pupils were asked to explain what they thought the data showed (identify trends and anomalies). They then had to interpret what the data showed and think about their reasons why there were certain trends or anomalies. Finally pupils were asked to pose questions about their data based on their thoughts and findings.

Prior input explored the definitions of GDP per capita and life expectancy plus how to use the website. Pupils had to develop, explain and refine their own ideas and data analysis.
How well did we achieve our aims?

- Pupils really enjoyed the two sessions; they liked the fact that they were using real-life data.
- Pupils considered cause and effect with maturity and in an insightful manner.
- The presentation of pupils' work reflected competence and pride.

What was the impact on pupils?

Pupils were well engaged in the data analysis, discussions and notation of their work. They could clearly explain their task and ideas to the head teacher who came to observe a section of the lesson, and applied learning to a range of scenarios in post-session discussions.

For example:

- Why did Ecuador’s suddenly life expectancy stay at 33 from 1800 to 1920?
- Why did Ecuador’s suddenly life expectancy rise a lot but Britain’s didn’t?
- What would happen to Ecuador’s GDP if a flood occurred?
- How come there’s a lower GDP in Columbia than England?
- Why did life expectancy rise up in the 1930s in Columbia?
- What caused life expectancy to stay level up to 1920?
- Why did the life expectancy in Venezuela suddenly go up in the 1920s?
- What made the GDP in Venezuela go down in the 1970s to 1980s?
- Why did the GDP per capita in Venezuela stay the same for 100 years?

Other outcomes

I feel that I will make significant efforts to increase the amount of opportunities to use critical thinking across the curriculum. We reflected that critical thinking can fit within pre-existing planning/subject content and why I feel that it can raise standards of pupils work especially in English and maths through all subjects.

School context

Thelwall Junior School is a one and a half form entry school with just over 150 pupils, the vast majority being white British.

Colin Goulder, Year 6 Teacher and Geography/History leader, Thelwall Junior School.
Global learning in secondary schools

Developing questioning in geography: Bishop Justus C of E School

What did we want to achieve?

Students can 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 being achieved at Key Stage 3 and 4, students then struggle with this skill. As such the investigation focused on Key Stage 3 and 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 six 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.
Critical thinking about data in geography and mathematics: Bourne Grammar School

What did we want to achieve?

The project is based on an idea from the Oxfam website. The aim was for the students to use real data that has an important geographical context. By doing this it was hoped that students would not only be able to increase their mathematical skills, but would also be more able to apply these skills to their learning in geography (in this case, their understanding of life in the Horn of Africa).

How did we go about it?

The project relied on data collected by Oxfam in relation to honey production in the Amhara region of NW Ethiopia. This is a traditionally poor region where it is often women who supplement the family income by collecting honey to sell locally. Since 2009 Oxfam have been involved in supporting women (though a scheme known as the Women’s Collective Action) by offering better equipment, more efficient methods and a cooperative selling agreement. The data compares women from this group (and the amount of honey they produce) with women from the area who are not yet part of the scheme.

Within previous geography lessons the students had learnt briefly about the Horn of Africa (physical features, names of countries, population data). The first lesson of this project looked in detail at the Oxfam honey production scheme. It introduced students to the ways in which women had been helped and looked in detail at the case study of an Ethiopian woman (Shaashi) who had benefitted from the scheme. We also discussed how Oxfam would have collected the data and then possible problems with this (this could have been done in much more detail with older students).

This was followed by a series of maths lessons looking in turn at scatter graphs, bar charts, pie charts and measures of central tendency. Each lesson started with an introduction of the skill followed by a chance to practise the skill using the data collected by Oxfam.

The second geography lesson (in the middle of the maths lessons) looked at starting to bring the findings from the maths work together. We also had a class discussion on who the information may be useful to - e.g. Oxfam, Ethiopian government, honey buyer, Tesco, neighbouring village.

The series of lessons finished with a joint geography/maths double lesson (with both teachers - we had to rely on colleagues covering our other lessons) in which students worked in groups of three with the aim of presenting to a specific organisation (see previous list). Students worked on poster paper and were given new data (i.e. different to what they had seen in maths lessons - but from the same project) and were tasked with producing graphs and averages to back up their argument. The lesson ended with students presenting to senior teachers.
What was the impact on pupils?

We feel that there have been a series of benefits of the project:

- Students (and staff!) have improved their knowledge of life in rural Ethiopia. Students have been able to empathise with women in the Amhara region and better understand the challenges they face.
- Students have improved their mathematical skills and are more aware of when to use specific types of graphs.
- Students have begun to interpret graphs and averages in a way that helps their understanding of the world.
- Students have worked together well – deciding on which tasks suit each student’s strengths
- Students have seen that the same skills are useful in maths and geography (and hopefully realise that other aspects of learning across different subjects are also linked).

What do the students think? Students believe that their understanding of mathematical skills has improved. The following table is based on an evaluation form in which students rated their own understanding out of 5.

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<th>Before</th>
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<td>Scatter graph</td>
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<td>Bar chart</td>
<td>3.5</td>
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<tr>
<td>Pie chart</td>
<td>3.4</td>
<td>4.7</td>
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<tr>
<td>Averages</td>
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<td>4.3</td>
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</table>

It can clearly be seen that the students believe that their understanding has improved through doing the project (closer inspection of their work shows, however, that students may have over-estimated their understanding of scatter graphs).

Students explained that they now have a much better understanding of life in Ethiopia – for example that it has a mix of poverty and wealth. They all noted how honey production was a way to ‘get richer’ and the brighter ones understood the impact on women’s lives.

All students said that they enjoyed doing a project across geography and maths (they particularly liked the final presentation lesson). A selection of their comments is listed below:

- ‘It is good as it is putting a real life situation into your maths – not just numbers from a text book’
- ‘I liked them because they were better and more fun than normal lessons’
- ‘It is better because the lessons are enjoyable, challenging and helpful’.

How might we change things for next year? Whilst we feel that the project was a success, there are several changes that we are considering for next year.
Some of the Year 7 students struggled to fully understand some of the concepts, especially the scatter graphs. It is possible that we could use the project with Year 8 or Year 9 students (though this would involve altering the order of geography topics…..) OR if the project was to continue with Year 7, exclude scatter graphs from the project entirely and concentrate on bar charts, pie charts and averages.

When looking at scatter graphs we would compare ‘amount produced’ to something easier then ‘wealth index’.

In future we would look to give some background info on population and development statistics on Ethiopia before starting the project (particularly introducing the concept of gender inequality).

The final ‘presentation’ lesson was too rushed for the students to fully understand their findings. In future we would ask the groups to assign specific roles and plan their organisation in the preceding lesson.

Include an additional lesson (prior to preparing the presentations) about how to compare graphs and explain their findings. This could have been done in either maths or geography, but would have given a clearer idea as to how to compare the information in their charts for the chosen companies they were presenting to.

Tim Randman, Bourne Grammar School, Lincolnshire.

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;

- 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 questioning.

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 were evident in their responses to the exam question. Their verbal responses in class 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 critically 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
- Carrie talks about the programme

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, Cambridge.
Critical thinking about migration: Churston Ferrers Grammar School, Torbay

What did we want to achieve?

We adapted an existing successful Year 8 Scheme of Work on Migration to introduce an over-arching BIG QUESTION across the eight weeks, in order to assist students in making deeper connections with the issues.

How did we go about it?

We set an initial home learning task set via a Google Classroom Question (see below for a sample):

8S3 - Is it useful to investigate migration? Why? Which questions do we need to ask?
8S2 - Is it useful to investigate migration? Why? Which questions do we need to ask?
8S1 - Is it useful to investigate migration? Why? Which questions do we need to ask?

We then used a gradual building-up of planning grids over the series of lessons, to better prepare students for the up-coming assessment:

https://drive.google.com/open?id=11gvT2DPVVkO6Fn-ywR3w5SOgSzHypyBNIMkfq-FTvw8&authuser=1
Should Mexican citizens be allowed to migrate to the USA?

<table>
<thead>
<tr>
<th>Facts:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opinions:</td>
<td></td>
</tr>
<tr>
<td>Arguments FOR migration:</td>
<td>Arguments AGAINST migration:</td>
</tr>
</tbody>
</table>

The ‘Questions for critical thinking’ sheet from the course is being used throughout to guide deeper thinking across my three Year 8 teaching groups.

How well did we achieve our aims?

The end-of-unit assessment will include the BIG QUESTION, “Should Mexican citizens be allowed to migrate to the USA?” Looking at the students’ preparation for this, I can see that a much more detailed understanding of the issues has arisen; this is in part due to the topical nature of this topic at the moment!

What was the impact on pupils?

We found more engagement with deeper questioning through the use of Google Classroom to set questions and to encourage students to respond to each other’s answers.

Ben King, Teacher of Geography, Churston Ferrers Grammar School, Torbay.

Incorporating critical thinking questions into Year 7 formative assessment: Falinge Park High School, Rochdale

What did we want to achieve?

We used the critical thinking questions introduced in the first part of the core skills - critical thinking and problem solving course, and wanted to incorporate them into the teaching of the unit called ‘crazy climate change’. The questions which we focussed on were:

- is it useful to investigate this? Why?
- Where is this information from?
- Who produced this evidence and why?
- What is fact and what is opinion?
- Is the evidence fair? Is it biased? What has been left out?
- What other evidence would be useful? Which other evidence should we see?
- What reasons are given? What reasons did we think of?
What arguments could I use? Which are the best arguments?
What do I think? What do other people think?
Do the conclusions make sense?
Do the conclusions match the evidence and the reasons?

With a focus on the use of these questions, we wanted the students to gain a deeper understanding of the controversial issue of climate change and how it might impact on people at different locations around the world. We had already looked at flooding on a local level through our rivers topic and we wanted to include a link with the rivers topic and climate change.

**How did we go about it?**

We showed varying pieces of evidence to the students such as photographs, newspaper articles, infographics and even blogs of recent updates on climate change; we used the critical thinking questions to help the students think more independently and deeper into the evidence which had been provided for them. Using the information from the topic and the deeper learning of the issue of climate change, the formative assessment was then created from a mystery assessment, adapted from a Royal Geographical Society resource: ‘Why has Zack broken his ankle?’

This is a mystery based in the future where Zack has broken his ankle due to the change in the UK climate. Contrary to everyone’s belief the temperature of the UK has not increased by 2050 but has decreased drastically and as a result of this Zack has broken his ankle by skating on the River Thames. The influx of melting ice water from the Arctic into the Atlantic Ocean has pushed the warm ocean current of the North Atlantic Drift, which currently warms the UK, further south: resulting in the influence of the ocean current decreasing and the mild temperate weather of the UK being replaced by a much colder climate, similar to the weather seen in previous cold periods such as the Little Ice Age.

What the mystery brings into the assessment in terms of critical thinking, is that students have to question all of the evidence which they have previously looked at, question its reliability and also question the barriers and problems which are involved in making predictions, especially linked to our climate and weather. Year 7 students are also learning difficult concepts in terms of location, place and interrelationships between the physical and human world, therefore again deepening their understanding.

The critical thinking mats were placed on the tables for the students to refer to throughout the topic and these were available to the students to then help them with their piece of extended writing for their formative assessment.

**How well did we achieve our aims, and what was the impact on pupils?**

One outcome was a definite increase in deeper understanding of the climate change, with the use of the critical thinking questions incorporated into the lessons prior to and within the formative assessment. Using the questions to encourage deeper thinking meant that more
time was necessary on the assessment, but the quality of writing produced by the students was at a much higher level and deeper understanding and investigation was shown.

My observations also showed a greater engagement in questioning the evidence provided, for example students asking ‘where was the information from?’, ‘could it biased?’, ‘should we believe this information to be accurate and correct?’. This was pleasing to see from Year 7 students who might normally just presume that information from a teacher is always accurate and should be taken on board.

More interest was shown from a larger number of students. When they found that they were able to debate this controversial issue in a safe environment within the classroom, and they were expected to question the evidence and not take it for granted that everything given was accurate. The students then became more engaged and wanted to investigate it further in their own time, looking at different sources, which was then linked to their homework for the topic.

Our next steps are to broaden out the approach to other year groups within geography and the rest of the Humanities Faculty. The school is also embracing the British Council Core Skills training, and planning on providing the course for all staff within the school in the next academic year.

Sarah Holmes, Falinge Park High School.

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](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 biggest effect change 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.
Using infographics to facilitate Key Stage 3 independent learning:
Year 9 Development topic: Roundhay School, Leeds

What did we want to achieve

- To engage and challenge students of all abilities
- To increase confidence of all pupils, leading to increased participation from least confident
- To improve interpretation skills (maps/graphs) in preparation for GCSE
- To allow students to problem solve on their own and together with peers
- To improve communication skills with peers.

How did we go about it?

I found a number of infographics online on the development topics (McDonalds, poverty, ownership, development indicators, HIC/LIC country studies). As I didn’t have enough individuals, I had duplicate resources to use with 16 pairs of students.

Before the main task, at the start of the lesson, I explained what an infographic is, watched YouTube video entitled ‘Infographics on infographics’ and we used an example of a deforestation infographic that I had previously used with Year 10 to evaluate what the positive and negatives are, and what would make that particular example better. Roundhay also display previous GCSE/A Level results information around the school on infographics, we discussed why this is used.

When distributing infographics to pairs, I matched more difficult examples with most able students. Less able will later be able to access this information with help and guidance of their more able peer pairs.

Timing was critical for the success of the lesson, so I used an egg timer and had clear instructions for each task displayed on the board.

Task 1 – 10 minutes: interpret and read infographic in pair.

Task 2 - 10 minutes: create 10 questions about the infographic, using question matrix (I recapped open and closed questions with students)

Connect
Look at the difficulty of the questions you can create – which level do you want your questions to be at?
Ask questions that would help you

Examples
Where is this? Why did.....?
Task 3 – 10 minutes: swap 10 questions and infographic with another pair
Task 4 – 5 minutes: review pair A’s resources and questions
Task 5 – 5 minutes: review pair B’s resources and questions
Task 6 – Discuss as a four which questions were best, how they can improve their questioning techniques
Task 7 – Each group of 4 must share one improvement of their questioning with the class, using an example of their work

This task could have extended into many lessons and there is much more scope detailed later in the text of improvements for next time.

How well did we achieve our aims?

Pupils were empowered to lead their own learning and were able to initiate their own progress; there was much more improvement in the less confident students. Less able students were able to use the motivation and knowledge of the more able students to access all tasks and be part of the whole activity.

Students were generally very informative about having seen infographics before.

Students really enjoyed the ownership of the task, and I appreciated facilitating the task, as I could move around the room and listen to the discussions taking place. This informed me students were problem solving and working together improving their communication skills.

When asked at the end to show RAG on their planners for understanding of their infographic, all students (in this class) showed green.

What was the impact on pupils?

When teaching I made sure to explain the activity in context of the new GCSE and A Level specs and how important is their interpretation skills of maps and graphs for analysis.

I encouraged students to engage with resources they encounter everyday….media, social media etc. on Snapchat the ‘Do you know? Features advertised often include facts/figures they should practice making sense of data where possible to improve their skills base.

Students remained on task for most of the task as they chose who they were working with, and the activity encouraged higher order thinking.

Other outcomes

The lesson took some time to pull together and plan. Though I now have the skeletal part to use with other topics, I will simply have to source other info graphs/make my own.

I plan to complete more lessons like this for Key Stage 4 and 5. I have used infographics before, but was not aware of the title ‘infographic.’ In the summer term, I would like to give all my Key Stage 3 classes the opportunity to create their own info graphs and search for their own to interpret themselves/in groups.
I have made the lesson available and reported back to members within my geography department.

I have also shared the concept of ‘infographics’ with the department and cross-curricular as CPD time.

Next time I could ask the students to review the activity afterward by using anonymous post it notes to answer ‘How did today’s lesson make you feel?’ ‘What was good? How could the task be improved for future lesson?’

I have also thought there is scope to lead on to a research task to find out why some of the facts are what they are for homework or in lesson if computers available.

Laura White, Teacher of Geography, Roundhay School, Leeds.
Critical thinking in geography

Critical thinking usually means better thinking. In the classroom it is closely linked with geographical enquiry and developing pupils' ability to think like geographers; as it develops geographical understanding, critical thinking helps raise achievement. It is particularly valuable because of geography's complexity and dynamism, for example applied to global learning. It is relevant to pupils of all ages, supporting their current learning, future employment and lives as knowledgeable and active citizens.

Three ways of thinking about critical thinking...

- Making better sense of information
  - Choosing/deciding the value of information and sources
  - Evaluating data and evidence
  - The significance of ideas
  - Problem solving

- Becoming a more open thinker
  - Choosing/deciding the value of information and sources
  - Evaluating data and evidence
  - The significance of ideas
  - Problem solving

- Becoming better at thinking
  - Being inquisitive
  - Asking good questions
  - Organising questions
  - Metacognition

Critical thinking can involve:

- **becoming better at thinking**, such as by asking and organising questions, for example in geography enquiry; speculating; reflecting on what has been learned, and how it has been learned, for example:
  
  - Beech Green Primary School: pupil questioning about sustainability and change
  - Dacre Braithwaite C of E Primary School: higher-level questions to investigate sustainability
  - Fleckney C of E Primary School: pupil questioning and reasoning about sustainability
  - The Mount School: pupil questioning and focused discussion about poverty and development
  - Bishop Justus School: designing questions to investigate Fair Trade
  - Central Foundation: developing higher-order questions to consider development choices and conflicts
  - Chesterton Community College: using a range of questioning pedagogies to investigate poverty and urban development
Hitchen Girls School: developing and organising higher-order questions to investigate globalisation.

- **making better sense of information**, knowledge and ideas, such as by examining evidence, considering alternative solutions, and learning to distinguish fact from opinion. Critical thinking helps build geographical understanding and the ability to reach informed conclusions, for example:
  - Charter Primary School: pupil-led questioning of sources of information about migration and interdependence
  - Durdan’s Park Primary School: questioning sources and debating Fairtrade
  - The Raglan Schools: thinking critically about viewpoints on sustainability
  - Bourne Grammar School: using data to investigate arguments about poverty and development
  - Chesterton Community College: evaluation of sources to investigate poverty and urban development
  - Falinge Park High School: critical thinking about the evidence for climate change
  - Roundhay School: evaluating evidence about development.

- **becoming a more open thinker**, such as by challenging assumptions through debate and considering the ethical issues underpinning geographical change. Critical thinking helps pupils become more autonomous learners, so helping to avoid telling pupils what to think or do, for example:
  - Central Park Primary School: developing argumentation and debate to investigate sustainability
  - High View Primary School: investigating values and challenging information about migration
  - Lavington Park Federation: exploring conflicting information and views about a controversial issue: migration
  - St Joseph’s Catholic Primary School: pupil questioning, argumentation and debate about sustainability
  - Churston Ferrers Grammar School: developing arguments to consider controversial issues
  - Hills Road Sixth Form College: evaluating the role of fact and opinion in perceptions of climate change.

Critical thinking is best applied to gain and deploy deeper understanding, rather than practiced as a skill in its own right. It is more likely to be effective as an organised process; thus the three dimensions represented in the diagram are linked and build on each other.