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

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. The course is based on a plan – do – review model: a key element of the training is that participants put one or more aspects of the course into practice in their classroom or school. They then review the outcomes and impact on pupils, before sharing their findings with other course members, other schools in the UK and internationally. These reports are a sample of the projects undertaken by teachers from courses between Spring 2016 and Spring 2017; they demonstrate a range of approaches to critical thinking, together with significant impacts on their pupils’ learning.

**EYFS, Key Stage 1 and cross-phase**

A. **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 (whole-school: page 3)

B. **Thinking critically to enable better Internet search strategies:** Furzedown Primary School, Wandsworth (whole-school, page 6)

C. **Improving Year 1 children’s questions:** Guilsborough CEVA Primary School, Northamptonshire (page 8)

D. **How can focused support with children’s questioning skills improve the critical thinking of Year 1 and 5 children?** Kensington Primary School, London (page 9)

E. **Raising participation from the least confident, improving critical thinking skills of all:** Orchard Primary School, London (page 10)

F. **Increasing the frequency and quality of questions asked by pupils:** Shaftesbury Park Primary School, London (whole-school, page 11)

G. **Developing critical thinking through questioning:** St Josephs Catholic Primary School, Wandsworth (whole-school, page 14)

H. **Asking questions about images:** Wellington Primary School, Hounslow (whole-school, page 18).

**Key Stage 2**

I. **Developing Critical Thinking through Controversial Issues:** All Saints’ Church of England Primary School, Putney (Year 4, page 19)

J. **Developing critical thinking in Year 6:** Central Park Primary School, Newham (page 21)
K. **Pupil-led questions about refugees**: Charter Primary School, Chippenham (Year 6, page 22)

L. **The Creative Curriculum: how and why do the foundation subjects play a pivotal role in teaching critical thinking skills?** Christ Church Primary School, Chelsea (Year 5, page 25)

M. **Developing critical thinking and problem solving in Year 5**: Curwen Primary School, Newham (page 27)

N. **Critical thinking in Year 4**: Durdan's Park Primary School (page 29)

O. **Introducing big questions into the geography curriculum**: Fairlawn Primary School, London (Year 4, page 31)

P. **Children asking questions**: Fleckney Church of England Primary School (Year 6, page 32)

Q. **Can we talk about it…?** (critical thinking about values in Year 6) High View Primary School, Battersea (page 34)

R. **Improving creating questions to help critical thinking in Year 3**: Leigh Primary School (page 35)

S. **Enabling Year 6 children to engage in controversial issues through critical thinking**: Lavington Park Federation (page 38)

T. **Has Christmas lost its true meaning?** Queen’s Crescent Primary School, Chippenham (Year 3/4, page 41)

U. **Using the rainforest to encourage critical thinking**: The Raglan Schools, Enfield (page 44)

V. **Enhancing critical thinking in geography**: Russell Scott Primary School (Year 5, page 45)

W. **The Challenging Geography of Amazonia**: St. Joseph’s Catholic Primary School, Wandsworth (Year 4, page 47)

X. **Using critical thinking to analyse data**: Thelwall Junior School, Warrington (Year 6, page 50)

Y. **How is Christmas celebrated around the world?** Westrop Primary School, Swindon (Year 3, page 52)

Z. **Using Critical Thinking to Develop Comprehension Skills**: Woodfield Primary School, Plymouth (Year 6, page 53).

You will also find examples of schools’ international Connecting Classroom projects [here](#).
EYFS, Key Stage 1 and cross-phase

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, even the focuses 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 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 conducted 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
Thinking critically to enable better Internet search strategies:
Furzedown Primary School, Wandsworth

What did we want to achieve?
This project focused on the impact of Internet use within a primary school classroom and we hoped to show that given adequate tools primary school teachers can teach their children to ask more effective questions to aid their Internet searches.

How did we go about it?
Six primary school teachers were interviewed regarding their own Internet search strategies and the findings suggested that teachers would welcome the idea of guidance when teaching their children to become more successful questioners of Internet searches. As the teachers were never given any learning tips for successful Internet searches, rather they learned through trial and error, they felt it was important that they can enable their children to learn more comprehensive questioning techniques when it comes to searching on the Internet.

<table>
<thead>
<tr>
<th>Year group taught</th>
<th>Age of teacher</th>
<th>Length of time teaching (years)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>2</td>
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<td>2</td>
<td>28</td>
<td>5</td>
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<td>3</td>
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<td>5</td>
<td>39</td>
<td>11</td>
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<td>6</td>
<td>51</td>
<td>24</td>
</tr>
</tbody>
</table>

I decided to create both an ‘Internet searching template’ as a potential way to explore how teachers could guide children to take on a more active approach in their information searching techniques on the Internet, and a visual guide for children to see their steps to success.
How well did we achieve our aims?

An Inset was carried out for the teachers, and Year 6 teachers have used the steps to success with their children. Some of the other teachers felt it was a little time consuming and would prefer if I, the computing teacher, would carry out an Internet search series of lessons at the beginning of the year. This is something I will build into my initial computing lessons starting from September.

What was the impact on pupils?

Year 6 higher ability children found the steps to success process successful and were able to create much deeper thinking questions.

I would definitely use this at the beginning of new term topics as I could see that the process did encourage more critical thinking. I could envisage some complications with the younger children, in getting used to mind maps, finding key words etc. – I think with them it may be easier to use an Ipad application that they can talk into.

Other outcomes

I think after using this process throughout the school, I would like to have produced a simple template for a critical thinking series of lessons, that could be used by other teachers (not only to be used for Internet searches) as a way of encouraging more critical thinking towards topic ideas.

School context:

Furzedown Primary School is an inner-city London school in Wandsworth. There are 440 children on the school roll; over two thirds of pupils are from minority ethnic backgrounds, and fourteen different ethnic groups are represented in varying proportions. Over a third of pupils speak English as an additional language: a number of these are at the early stages of learning English.

18% of pupils are entitled to Pupil Premium. We currently have 59 SEND children in the school. This is 13% of our whole school population.

Shaun Naghten, Geography coordinator, ICT coordinator and teacher of computing from Year 1 – Year 6, Furzedown Primary School, Wandsworth.
Improving Year 1 children’s questions: Guilsborough CEVA Primary School, Northamptonshire

What did we want to achieve?

We wanted to improve the quality of questions that Year 1 children were using to ask about a topic.

How did we go about it?

I looked at examples of question stem grids (used on the course) and devised a simplified one to use with Year 1 students. We had already worked on the question words, but I hoped adding the ‘were…, did…, could…, might…’ extensions would generate more thoughtful and interesting questions to consider. I used the question stems across the curriculum – particularly in English and RE as well as in geography.

<table>
<thead>
<tr>
<th>were…?</th>
<th>did…?</th>
<th>could…?</th>
<th>might…?</th>
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<tbody>
<tr>
<td>Who</td>
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How well did we achieve our aims?

Once the structure had become embedded children became quite adept at thinking of higher level questions when the stems were available as a prompt. They were able to ask interesting questions of a volcanologist who came in to talk to them about their topic. It was worth investing the time at the start to introduce the grid and why it was useful.

What was the impact on pupils?

The questions asked by even the lower ability pupils were much improved after only a few weeks, and they were beginning to think about how they would go about finding the answers to these questions. When we used it in role play (in English) they were thinking about how the character would respond and improvising in role. The higher achieving children enjoyed challenging themselves as to how many different stems they could think of a question for. All children (except our non-verbal Downs child) were able to access the ideas. Initial work was just in Year 1 class but was then shared across Reception to Year 6, and shared at staff meetings to discuss points forward as a school.

Alison Pryce, Year 1 teacher at Guilsborough CEVA Primary School, Northamptonshire
How can focused support with children’s questioning skills, in Year 5 and Year 1 topic lessons, improve the critical thinking of these children? Kensington Primary School, London

What did we want to achieve?

Our first title was ‘How can we improve critical thinking in the school through our use of effective questioning?’, then it became: ‘How can we improve the questioning skills of our children in order to get them to think more critically?, then finally the title above.

Initially I wanted to improve the questioning of children by adults in order to get children to think more critically, however when I looked at adult questioning across the school this was of an exceptional level. However in some classes, children seemed quite passive, not always asking higher level questions of the teacher, of each other or of themselves. I therefore decided to try and improve the questioning skills on the children in our schools.

How did we go about it?

I distributed a really useful resource in improving children’s questioning to teachers, in the hope that they would be able to use this in class to help improve this. However, without embedding this into anything the teachers were doing, it became buried in the paper work and unfortunately teachers didn’t use it.

How well did we achieve our aims?

With the help of my Head Teacher I have come up with a way of embedding this into the curriculum and make outcomes more achievable. I am going to work with Year 5 and Year 1 to improve the questioning skills of children during topic lessons. I hope to do this by incorporating big pictures to start each history/geography topic, which children can ask questions about. To start with this will be supported by the teacher, offering questions stems of different levels. And after time, hopefully children will get used to some of these openers and come up with some more create questions, leading to more critical thinking. These questions can then be revisited at the end of lessons as a plenary or at the end of a topic.

In this way the project will be linked to the school’s priorities, namely oracy. In working with two year groups I hope to be able to more easily support, monitor and observe changes.

What was the impact on pupils?

The project is ongoing.

Other outcomes:

I have learnt a lot about my own professional practice throughout this process, and had the opportunity to reflect on this. For example it was a mistake to introduce resources to class teachers en masse, and cold, without embedding it at all in something that teachers were already doing.

Eleanor Lucas, class teacher and History and Geography Coordinator at Kensington Primary School.
Raising participation from the least confident, improving critical thinking skills of all: Orchard Primary School, London

What did we want to achieve?

- To increase the confidence of all children, leading to increased participation from least confident.
- To create a culture of having a go, through welcoming all ideas and letting children lead discussions and evaluations.
- To improve children’s ability to think creatively, to analyse and to evaluate their own ideas and those of their peers.

How did we go about it?

The Head Teacher came and informed the children that we have some money and would like to improve our outside area. She told the children they have the best ideas as it is theirs and they know what they want.

1: We selected a sample (SEN, PPG, already confident, boys and girls etc) of four children and asked them to take pictures of things they liked about our outside classroom, then pictures of areas they would like to improve. The class teacher uploaded and created a flip chart and the children shared this with the whole class. The rest of the class added to their ideas of what they liked and wanted to improve.

2: An adult facilitated the children whittling the ideas down into ‘do-able’ and ‘not do-able’ by discussing each idea and asking themselves and each other ‘why’ (it could or couldn’t work). The children then chose their top five from what was left.

3: Class teachers all fed the children’s ideas back in a phase meeting. The Phase Leader then sent out specific areas to each class, for the children to create a mood board to present to an appropriate leader. However, this was not the initial plan for the research, as I believe it took away from the children having ownership of it as they did not decide which one they wanted to pursue themselves.

4: The children were told their area and created a mood board using the children’s quotes and ideas. I think this would have worked better if the children also drew their own pictures or wrote their own ideas etc – but the class teachers were unfortunately pushed for time.

5: The four children selected from the beginning then shared the mood board with a partner class as a practise for presenting to the leadership team.

Unfortunately, this was as far as we got. The aim was to feed back to the leadership team, action our ideas and then re-evaluate the outside area.

How well did we achieve our aims?

I definitely saw an improvement in participation from my least confident children. Not all Class Teachers reported finding the same; however I think if the aims and methodology...
behind the research had been better shared, their approach to the research may have been different, resulting in different findings.

I cannot say I saw an accelerated increase in children’s ability to think creatively, although some children are more creative (was it the research or natural progression…?) however I do feel like more children are able to evaluate in everyday situations. I also feel like the results may have been different by the end of the research as we missed a vital chunk at the end.

We have definitely created a classroom of openness and acceptance and children are a lot less dismissive of ‘silly’ suggestions and are now justifying why a suggestions would not work which requires a higher level of cognition, which is great.

**What was the impact on pupils?**

More children are fully engaged in whole class lessons, as I believe they no longer feel unsure about volunteering ideas etc.

Beckie Wright, Class Teacher (Humanities and RE subject leader) Orchard Primary School.

### Increasing the frequency and quality of questions asked by pupils

**Shaftesbury Park Primary School, Battersea**

The aim of attending the course was to increase the status of critical thinking within the teaching at Shaftesbury Park and to embed critical thinking and problem solving into the International Primary Curriculum (IPC) subjects, as well as maths, reading and literacy.

Taking from a broad range of subjects, structures and techniques covered during the course, Shaftesbury Park decided to focus in on questioning within the classroom. A project was set up to increase the frequency and quality of questions asked by pupils.

As a result of the project, lesson observations have seen an increase in teaching practices that promote and celebrate questioning from pupils. There has also been an increase in the quality and frequency of questioned asked. Anecdotal evidence also suggests pupils achieving greater depth of understanding of taught subjects.

This project, as detailed below, is a direct result of the British Council /GA training.

**What did we want to achieve?**

The aim of the project is ultimately to promote critical thinking, both as practiced by the pupils and as a skill incorporated within the teaching objectives. The aim of this is to increase the depth of learning pupils achieve in all of their learning, increase their ability to discuss and analyse new information and to promote a critical and inquisitive outlook in their learning.
As a first step toward this, our short-term (February 2017 - July 2017) aim is to increase the frequency and quality of questioning from the pupils. We want our pupils to ask a greater number of open questions within lessons.

How did we go about it?

Baseline data was collected on the levels of pupil questioning via support staff observations. At the time (Spring Week 1) the ration of questions asked by teachers/pupils was 81:19 in favour of teachers.

Taking questioning as a primary focus, the project used materials from the BC/GA training within an inset evening (see download below) to the teaching faculty. Following an introduction, three examples of techniques taught within the course (silent debate, questions relating to an image, pose-pause-pounce-bounce) were practiced amongst the staff.

After this, there was time for open discussion before each of the key stages gathered together to brainstorm further ways they would promote questioning in their classroom in the Spring Term.

Following the inset evening, the ideas generated were displayed in the staffroom above the photocopier - a prime location to ensure maximum attention! To keep the display updated and interesting, teachers were encouraged to write good/interesting/funny questions asked by the children on blue speech bubbles and attach it to the display. The ratio of teacher/pupil questions was also displayed in pie-chart form with spaces for the remaining terms to show our progress. After four weeks, I interviewed each teacher to see how they were getting on and to encourage further experimentation and trialling of different techniques.

How well did we achieve our aims?

The techniques employed by staff as result of the training were:

**EYFS.** In both reception classes and nursery, they used questioning from the pupils as part of their ‘Entry Point’ for IPC. This formed a number of questions that they put on display that is subsequently leading their learning throughout the topic. The photo is an example of a Reception Class’s question harvest for a new IPC topic.

In addition to the questions poster, they hung up question starters for each activity station, to be used by support staff to start enquiring. This was done to model questioning for pupils and promote enquiry-based learning.
Key Stage 1. Years 1 and 3 focused on giving pupils enough time for each pupil to answer a question. They have also tried asking pupils to build on fellow pupils’ answers. In Year 2, they used a prop in the form of an artefact to intrigue pupils into asking questions before completing research and enquiries lessons to find answers.

Key Stage 2. In Year 4, the teachers have promoted questioning by trying to fill a ‘question bucket’ in which a stone is dropped in every time a pupil asks a question to form a collective goal of asking lots of questions. To ensure they keep expectations high for the quality of questions, they have introduced the ‘question of the week’ (see photo).

In Year 5 and 6, they have been incorporating reciprocal reading techniques for discussions throughout the curriculum subjects as well as reading. They also have been using silent debates (see photo) to engage pupils in IPC lessons and in literacy and ensure all pupils have a ‘voice’ in debates and discussions.

Overall, all members of the teaching faculty have been actively involved in promoting questioning from pupils. At least two members of our support staff from each phase have also been involved in making specific observations and to record the number of questions asked over two sessions.

What was the impact on pupils?

Lesson observations following the inset have seen an increase in the quality and numbers of questions the children have been asking. This is based on feedback from the senior leadership team who carried out observations during Spring Week 9.

There has been some evidence of greater depth of learning and anecdotal evidence from teachers that class discussion has been of higher quality. Feedback from teachers has also suggested that pupils are more engaged in wanting to find out answers through their learning. Anecdotal evidence in the form of teacher feedback has also suggested an increase in listening skills, as pupils seek to build on other pupil’s answers and respond to other pupil’s questions.

Download

- Presentation: Staff inset slides and outcomes (pdf)

What next?

We will continue to monitor the number of questions as a ratio between pupils and teachers throughout the academic year of 2016/17, with the aim of achieving 40:60 in favour of pupils by the end of the year.
A second inset day is planned where we will feed back as a faculty about techniques we have tried and to share ideas suggestions for further development. This inset will then move the project on to the next stage: looking at the types and quality of questions asked and track this using Bloom’s Taxonomy.

James Tristram, Class Teacher and Humanities Lead, Shaftesbury Park Primary School, SW11 5UW

Developing critical thinking through questioning: St Josephs Catholic Primary School, Wandsworth

What did we want to achieve?

Project aim: To strengthen the process of critical thinking in either geography or history through the development of questioning techniques.

Project impact measures:

1. Move the teacher/pupil questioning ratio from 50:50 towards 30:70.
2. Learners show a growth mindset and a higher level of thinking through the use of the types of questions they ask.

How did we go about it? (See attached PowerPoint® presentation to show more detail)

Methodology of project:

3. Through a CPD opportunity, teachers were introduced to a range of techniques for asking better questions.
4. Teachers then selected one questioning technique to use in the classroom for either geography or history.
5. Peer lesson observations were carried out to focus on the teacher/pupil questioning ratio and the types of questions asked by learners and were matched to Blooms Taxonomy.
6. Samples of work were taken to show new learning/thinking that has taken place by the learner.

Project timeline:

November – December 2015: teachers introduced to techniques for asking better questions.

4th January 2016: Whole school CPD on Critical Thinking.

5th–22nd January 2016: Teachers used better questioning techniques with their classes.

School week beginning 5th January 2016:

- Developing a no hands up classroom using the lolly stick approach.
Learners were introduced to examples of critical thinking questions based on Bloom's Taxonomy in history and/or geography.

LSAs completed a frequency questioning tally chart and a critical thinking question type tally sheet to baseline types of questions asked.

School week beginning 11th January 2016:

- Teachers develop the Pose, Pause, Bounce, Pounce approach in the context of history and/or geography (Key Stage 1 to use daily images as stimulation and Disney characters to reinforce the approach).
- 12th January 2016: Staff meeting to review critical thinking strategies used.

School week beginning 18th January 2016:

- Staff developed thinking time by using the 'Think, Pair, Share' approach in history and/or geography. (EYFS to focus on extension questions e.g. Tell me about...? What do you think about...? How? Why? Learners undertook possible activities like Hot Seating, Role Play, Discussions, Imagery stimulation, Knowledge mind maps etc.).

25th - 29th January peer lesson observations and work sampling.

- Observers focused on the frequency and types of questions used in the classroom by completing a:
  - Frequency of questions tally chart.
  - Critical thinking tally chart.
  - Collecting work samples to show the progress and impact of critical thinking.

1st – 11th February 2016: Outcomes were analysed and shared in school as a PowerPoint® Presentation, showing where learners progressed against the project’s impacts measures.

- The critical thinking group met on Monday 1st February to analyse results and develop a PowerPoint® to share results.
- 9th February 2016: Critical thinking projects shared at a Staff Meeting: how can we move the project forward?
- 11th February 2016: Outcomes shared at the British Council Connecting Classrooms Workshop.

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

How well did we achieve our aims? (See attached PowerPoint®, Phase 3: initial findings, for further detail.) The project achieved its aims by using three critical thinking strategies. These were:

1. Using images to develop higher order questions.
2. Through the introduction of the no hands up strategy and the use of lolly sticks.
3. Through the development of the Pose, Pause, Pounce and Bounce strategy (PPPB).
Below are our initial findings.

**Using images to develop higher order questions**

We found geographical and historical photographs and images were very powerful in helping the children develop their higher order questions. At the start of the project, the teacher and their Learning Support Assistants matched the types of questions the children asked against Blooms Taxonomy and at the end of the project they carried out a similar exercise and compared the difference in the type of questions asked. The school’s Learning Support Assistants carried these observations at times during a geography or history lesson unknown to the teacher (See slide 36 for results.). Initial findings suggested that the children were asking higher order questions by the end of the project.

**No hands up strategy and the use of lolly sticks**

Comments by the teachers suggested the following:

- The children were enthusiastic about the approach.
- It reduced competitive nature of some children to feel that they have to answer questions.
- Lolly sticks kept the children on task.
- It gave all children in the classroom and opportunity to share their thinking and learning.
- It improved the children’s listening skills.
- It allowed children the opportunity to think aloud in class in a safe environment.
- The children responded to questions calmly as a result of the approach.

**Developing the Pose, Pause, Pounce and Bounce strategy (PPPB)**

Comments by teachers on the PPPB strategy.

- The children are positively engaged with the process. Creates excitement.
- It allows children more time to process the question and to think.
- Is good for role modelling answers to the rest of the class.
- Improves the children’s listening skills.
- Encourages children to consider alternative thinking and to build on that thinking.
- A greater variety of answers are now given in the classroom by the children.
- Has led to children debating the thinking of their peers.
- Works well with the higher ability children.
- The children’s answers can be linked to philosophy – ‘I agree…’ and ‘I disagree…’
- PPPB is not just constrained to geography and history; it has now become successful cross curricular strategy.
- Forces the teacher to wait significantly longer for children to process questions and to think.
What was the impact on pupils?

Impact measure 1: Move the teacher/pupil questioning ratio from 50:50 towards 30:70.

- Initial finding: In 6 out of 7 classrooms surveyed, the pupils were asking more questions than the teacher.

Impact measure 2: Learners show a growth mindset and a higher level of thinking through the use of the types of questions they ask.

- Initial finding: In 5 out of 6 classrooms surveyed, learners were showing a growth mindset and a higher level of thinking through asking higher order questions.

Other outcomes:

At the final stage of the project the initial findings were shared at a staff meeting. Staff were encouraged by the project’s impact and, as a result, agreed that the project would continue throughout the academic year. They put forward some next steps for development, including possible strategies to engage the learner with critical thinking:

- Set up a good questions board in each classroom.
- Award one member in each class a certificate for being the ‘questioner of the week’.
- Link classroom vocabulary walls to develop good questions e.g. Word of the day used to base questions around.
- Develop more P4C style debates as classroom practice and set ‘thinking’ homework, linked to the question of the week, which encourages children and parents to discuss and share ideas.
- Use questioning to address misconceptions and develop the pupil voice.
- Use talk partners to deepen critical thinking and questioning.
- Run a parent workshop on critical thinking and thinking skills.
- Target groups of children e.g. FSM, EAL, SEND, More Able, with more opportunities to develop their critical thinking and questioning skills to enhance progress.

A teacher from our school summed up the success of the project by saying “These critical thinking strategies are great! I can’t stop myself using them beyond geography and history”. The project has positively engaged staff and learners with the strategy of critical thinking and as a result, it has been decided that we would extend our practice of critical thinking across all curriculum areas and adopt it as a whole school approach to raise the achievement of our learners.

Download

- Presentation: developing critical thinking through questioning.

Stephen Ellis, Assistant Headteacher, St. Joseph’s Catholic Primary School.
Asking questions about images: Wellington Primary School, Hounslow

What did we want to achieve?
As a school we wanted to ensure that children were being given opportunities to ask higher order questions during lessons and throughout their school day.

How did we go about it?
Question stations were set up throughout the school's central corridors which allowed infants and juniors to see them. Interesting images from around the world were posted on the stations and children were encouraged to ask a question about them. Children had to 'spin the wheel' to support their question starters when composing their own questions about the image.

The question stations had to be changed daily as it became ever more popular and teachers also posed their questions which were ideal models for the children. In addition, at the start of each new topic for history and geography children must complete a circle map (one of our thinking tools). This allows children to recall what they already know about a subject and consider things they would like to find out. The teacher then uses these questions to base their planning on and these questions are revisited at the end of the topic.
What was the impact on pupils?

We have begun to use Geography starters in our lessons, for example adding captions to images. Children have to match images to different captions such as, happy, sad, work, transport. This allowed the children to engage in discussion and question their own thinking. The children discovered what they consider to be ‘happy’ may not be what others consider it to look like.

Since introducing the question stations children have improved their vocabulary when asking questions for example, using blooms taxonomy to structure their questions. Children have begun to ask questions that are different to their friends, which have allowed teachers to see individual perspectives and how children view things differently.

As a school we now wish to create these question stations in classrooms and consider ways this can be incorporated into our EYFS.

Sarah Evans, Wellington Primary School, Hounslow.

Key Stage 2

Developing Critical Thinking through Controversial Issues: All Saints’ Church of England Primary School, Putney

What did we want to achieve?

The aim was to improve critical thinking within the class, by giving pupils the chance to think around and debate controversial issues, expressing well balanced opinions and reach their own clear conclusions. Previously, pupils have sometimes been seen to be reliant on being provided the final answer rather than continually drawing their own conclusions.

Through a topic based approach pupils will look at the Ancient Egyptians and begin to think about the geographical and historical events that have occurred throughout this era and at times compare it to the present day Egypt.

The aim of this project was to give pupils the opportunity to become more independent in their thinking and, after reviewing a range of resources and information, begin to form their own opinions and create clear conclusions, using a range of resources to help create and explain their thinking.
How did we go about it?

At the beginning of each lesson, an issue that could be deemed controversial and which would not have a clear yes/no answer was put forward to the class. As the school uses a topic based approach in an attempt to create well balanced learners, it was found that putting a controversial issue forward, as either a question or statement, was usually clearer when splitting history and geography into clear and concise separate subjects. For example, when looking at the pyramids the question put forward was, ‘Were the Ancient Egyptians smarter than the current generation?’ and whilst looking at the River Nile, the geographical statement, ‘It was a mistake to build the Aswan Dam’ created many reasoned responses.

Instead of only providing facts for children to learn and base an opinion on, the lesson began with a question or statement that would be based on the day’s lesson. This question/statement would be used to draw out previous learning and opinions from the children that were already established.

To ensure pupils were beginning to think critically, a range of sources would be provided and children were required to look at the information and see what could be used to help answer the question/statement. The range of resources could be accessed using a range of methods, including silent debates, formal debates, class discussions, etc. Allowing the children to access this information but not informing them of a right or wrong answer meant that pupils began to foster a range of positive skills.

How well did we achieve our aims?

The first two weeks required a lot of prompting as to what to do. Children were able to come up with their own opinion but were not always backing it up with facts unless prompted. This meant that the material was needed to be accessed almost immediately.

Soon children were beginning to assess all the information and think critically about the evidence in front of them. Many were beginning to question the motivations behind human and political events and were beginning to accept that there was not always a clear answer.

This way of thinking caused a range of positive discussions and all pupils were seen to be more willing to share ideas with the class than before.

What was the impact on pupils?

Pupils became more confident in sharing their ideas, with less fear of giving a statement that may later prove incorrect. They became more able to express their opinions and were able to defend them with facts they had looked up themselves. Pupils were engaged with all the activities and were willing to take more time in evaluating resources and texts.

Other outcomes:

Though the aims of having the pupils begin to think independently and critically on a topic that would cause them to draw clear conclusion were met, it was noticed that children began to question the resources more than had been observed previously. Higher ability children were seen to question the validity of each resource and were able to rate the importance of each piece of information.
Through analysing different resources pupils were beginning to draw their own conclusions and less input was needed from the teacher. All children began to consistently give their opinion and back it up with facts and information they had learnt in their session.

Pupils were also more comfortable with changing their opinions and were able to discuss why they had done so and defend their reasoning. Having a whole class debate at the end of each lesson meant that all pupils were able to voice their thoughts on the topic.

This method of teaching geography to encourage critical thinking will be shared in a staff meeting with another member of staff who also attended the critical thinking course. This method does require more planning to ensure that there are enough resources and wide range of examples, however the benefits were deemed to be worth it.

**School context:**

All Saints’ Church of England Primary School is a one form entry primary school next to Putney Common. The project was introduced to the Year 4 class and this practice will remain in place.

Jane Croskery, Year 4 class teacher and geography coordinator, All Saints' Church of England Primary School, Putney.

**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 viewpoint. 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 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

1 Point, Evidence, Explanation, Link.
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.

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](https://tracesproject.org) 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? <add hyperlink to pdf ‘charter critical thinking’>

Claire Coverley, Charter Primary School, Chippenham, Wiltshire.

The Creative Curriculum: how and why do the foundation subjects play a pivotal role in teaching critical thinking skills? Christ Church Primary School, Chelsea

What did we want to achieve?

In this project I wanted to consider what the nature of critical thinking is in a primary school context, then furthermore, how to structure, develop and embed it in my classroom teaching, across the whole school and within the new curriculum. Within my role as a member of the SLT and whole school Creative Curriculum Coordinator I also wanted to explore the intrinsic connection and relationship between creativity, critical thinking and problem solving. This linked well with the formal introduction of Philosophy for Children, through training and experience, across all key stages in my school.

The focus area I choose was to apply the teaching of critical thinking skills within a subject area rather than discretely. During the last academic year, my focus subject area was Geography (part of the school’s development plan) but in this project it was taught within a unit of History (The Victorians). The means by which I taught these skills were within ‘thinking routines’ taken from a project called Artful Thinking. This is an American initiative whose approach for teaching thinking uses Art as a force for developing pupil’s thinking dispositions. My specialism in Art Education and the connection between creativity and critical thinking is an area that I have been particularly interested in for teaching Art & Design in primary schools.

The goal of Artful Thinking is to help pupils develop thinking dispositions that support thoughtful learning by making critical thinking a more visible and apparent aspect of classroom life. In my senior leadership role it seemed logical, whilst introducing the new creative curriculum (Geography, History, Art and DT) within our school, to simultaneously embed and integrate a common understanding and reiterate the importance of nurturing young children’s creative and critical thinking. As an outstanding school, an ongoing development focus is to ‘narrow the gap’ between children’s attainment, the progress and performance of pupil premium children and the role of pupil voice. Teaching critical thinking skills addresses these challenges through an emphasis on: language, expectations, modelling, opportunities, motivation, relationships and classroom environment.
How did we go about it?

This initial project was carried out in my own Year 5 class of 29 children (aged 9-10). The class cohort consists of four children with SEN; two children with statements (ADHD) (Visually Impaired) and six with EAL needs. The children took part by completing three thinking routines/frames over five sessions (approx. 30 mins). The stimuli were three different Victorian black and white photographs.

Photograph 1 with a routine called Think/ Puzzle/ Explore

Photograph 2 with a routine called Looking 10 x 2

Photograph 3 with a routine called Creative Questions (part 1, 2 and 3)

Photograph 1 and Think/Puzzle/Explore

This thinking routine was an introduction to the Year 5 history topic, Victorians and I was particularly interested in the effect that this would have on their engagement to learn, ask questions, write known facts and inspire further learning.

Three groups of learners were particularly drawn to my attention in terms of their strong interest, natural ability and affinity with this approach to learning. They were pupils with EAL, high attaining and ‘quiet’ pupils and lower attaining children with low level behaviour concerns. As a class teacher this also highlighted the merits and potential drawbacks of differentiated group teaching as opposed to mixed attainment learning in primary school. Children’s questions focussed on historical concepts such as: setting, figures, age, gender, economic status, propaganda, relationships, similarity and difference. Many of their questions reflected historical critical thinking skills such as: enquiry, evidence and communication.

Photograph 2 and Looking 10 x 2

This routine was an exploration of the children’s use of language and vocabulary. It was very clear that a paucity of language prevented some children from contributing ideas in a whole class discussion but given time and an opportunity to write down individual words or phrases, gather and formulate their thoughts, they grew in confidence. Again, this routine emphasized the historical skills of observation and communication.

Photograph 3 and Creative Questions

This part of the project was carried out over a period of time and had three different aspects: initial questions (in black), answers written after a research homework (in green) on the related subject (Queen Victoria’s family), additional answers and questions written by another classmate (in red). Lastly, there was an opportunity to reflect on any new ideas about the artwork/topic. This activity encouraged self-generated questions, collaborative learning and reflected better understanding of known historical facts (particularly from higher attaining pupils). The final part revealed how the pupils learning had progressed and how they were able to ask higher order questions; commencing with phrases like, ‘what would change if, what if we knew?’ More open and flexible thinking was also apparent from the whole class in the final session.
How well did we achieve our aims?

I have briefly described some of the impacts that I observed on pupils’ learning but decided that it would be beneficial to ask them how they had felt about these activities and experiences. I wanted the pupil evaluation form to consider the three orientations of critical thinking: making better sense of information (facts), becoming a more open thinker and becoming better and more confident at metacognition (thinking about thinking!). The context for this project was within a history unit but one of the aims is to encourage critical thinking in all core and foundation subjects.

What was the impact on pupils?

These are some quotes from the children:

- I enjoyed doing this because I like looking at pictures and asking questions.
- I found it pretty easy most of the time but sometimes I found it challenging against my brain.
- I like looking at pictures to find little clues of her life and feelings.
- I liked looking for clues and hints in the pictures because there were things that I knew and didn’t know so I learnt new things. And it was a subject that I hadn’t studied yet.
- It was challenging to begin with but it got much easier and funner!

Other outcomes:

This project has given me an opportunity to consolidate my understanding of the key role that images can play in teaching thinking skills to primary aged children. It is also clear that to teach CTPS strategies you need to make them explicit and give children time and opportunities to practise them. If these are skills that can take weeks, months or years to learn, then a whole school approach is needed.

I hope to be able to share this project with the other members of SLT in my school and whole staff, and I would like to be include these findings in my Geography initial teacher training sessions.

Arabella Davies, Year 5 class teacher, Creative Curriculum whole school coordinator and member of the Senior Leadership Team, Christ Church Primary School, Chelsea.

Developing critical thinking and problem solving in Year 5: Curwen Primary School, Newham

What did we want to achieve?

We wanted to develop teaching strategies that promote the development of Critical Thinking and Problem Solving (CTPS) core skills in young children. The sooner children begin to use CTPS skills, the more inquisitive they become and the more they embrace learning. Rather than it being a conscious process, CTPS skills will become embedded into cognitive
processes and become a natural way of thinking. With this in mind, it is important that the journey of learning CTPS skills begins early, with primary schools being the ideal platform from which to start this process.

How did we go about it?

As CTPS skills are best taught in the context of subject matter. As such, two tasks were designed that could be adapted to a variety of subjects. The first was a picture analysis activity, Picture of Influence, whereby an image was chosen and children had to describe what they could see in the image. Linking to this, children had to describe what this suggested, making links between what they could see and what these things suggest is happening or resulting. The final stage asked for the consequences of the suggestions. The final stage was adapted in later activities; children were asked to think of questions that they would like to ask about the image, to further develop their understanding. They were guided towards higher level thinking questions, e.g. beginning ‘Why might…?’ ‘How will…?’.

The second activity, entitled Chain Reaction, again asked children to think of consequences. Building on from the Picture of Influence activity (but could be adapted as a stand-alone task), children identified something that they could see in the image, e.g. smoke coming from the ships funnel. They then thought about the consequences of this, on people and the environment, writing each next step on a piece of paper until they had exhausted their ideas. Children were then encouraged to look back over their statements and identify gaps, or where further explanation was needed to create a full picture. Only when they were satisfied that they had fully explained the chain of events, they put together the Chain Reaction paper chain.

How well did we achieve our aims?

The Picture of Influence activity requires a lot of guidance, especially when it is introduced. The task requires modelling, with the best outcome being achieved where the teacher has pre-planned suitable suggestions and consequences to enable children to be guided where they may initially find it difficult. Having different options for the final ‘box’ in the activity allows for the activity to be used at different stages of a lesson, e.g. as a starter that can be returned to when consequences have been investigated further, or as a tool for further planning if children are asked to think of questions they want to ask about the image. The Chain Reaction activity was more focused, enabling children to consider one aspect at a time. As such, this is accessible to all abilities, where the concept or idea that is being considered can be tailored to the pupil’s ability. The notion that there can be gaps, and that the chain of events can be added to before it is completed, give the participants confidence to look back over their work and correct any errors of misunderstandings. Both tasks certainly encourage children to evaluate evidence, consider different perspectives and look for deeper meanings.
What was the impact on pupils?

Pupils were engaged and motivated to think for themselves. The Chain Reaction activity in particular promoted teamwork and communication skills, which resulted in children supporting each other in thinking critically about the task. They were able to consider different viewpoints and think deeply about issues, following the knock-on effects of each through to the end.

Emma White: Head of Year 5, Geography Subject Leader, Curwen 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 deeper 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 give 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 began 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 means 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.

Kimberley Rowsell, Durdan's Park Primary School, Southall.
Introducing big questions into the geography curriculum: Fairlawn Primary School, London.

What did we want to achieve?

We have worked hard as a school to change our learning mindset. We have developed a ‘learning to learn’ framework and have identified five core skills that a successful learner needs to develop which are; Resilience, ‘Reflectiveness’, Collaboration, Curiosity and Independence (as illustrated in our poster).

How did we go about it?

We wanted to improve our Geography teaching by developing pupil’s questioning skills and by encouraging them to challenge why they are learning something and how the learning will benefit them. Our Geography curriculum focused on key skills, knowledge and vocabulary that we were required to teach, but beyond Reception included no reference to questioning. By introducing a big question into each topic we felt this could be a way to help explore why we are learning something and to allow pupils the opportunity to pose their own questions and become more critical in their thinking.

By taking curiosity as our focus and its key components, as identified by our school, of; making links, asking questions, imagining and absorbing we planned multi-sensory, cross-curricular activities to engage our pupils in their learning. At the end of the term we exhibited their learning to parents in a museum event.

In Year 4 the topic was Tales of the Thames, with a particular focus on the Big Stink of 1858. Pupils visited Deptford Creek on a field trip and looked at life in the Thames today. They went to the Docklands museum and tried their hand at mud larking to unveil the hidden history of the Thames and they collaborated to make modroc models of river basins which they labelled with the key features. They used a QADS frame (question, answer, details and source) to research the Big Stink using a range of sources. They tackled questions such as:

- What was it like for Londoners during the summer of 1858?
- What caused the Great Stink?
- How did the great stink change the lives of Londoners today?
- Could the Great Stink have been prevented?

At the end of the project a group of pupils were then asked to evaluate their learning and to take part in a discussion group where they were asked questions such as:

- What has this topic taught you?
Why is it important to study river basins?
How can we learn from the past?
Can understanding the structure of a river basin help us to combat pollution?
Where does the pollution in the river go?

The children were also given a question generating sheet where they collaborated on coming up with their own bigger questions e.g. what is pollution? Who is responsible? If the Thames was still so heavily polluted how would it affect us, what could we do?

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

Most year groups planned engaging activities that stimulated their pupils’ curiosity and encouraged deeper thinking. The Year 4 pupils were able to use a prompt sheet to ask probing questions about their learning and to generate an informed discussion. A term after the topic they were still able to reflect on what they had learnt and the usefulness of that knowledge. The next step for us as a school is to embed the bigger questions into the curriculum and one way we hope to do this is by making use of pupil working parties.

**What was the impact on pupils?**

Pupils were all engaged by the cross-curricular, multi-sensory and collaborative approach to learning. By including more open questions in the learning, pupils were able to generate further ideas and questions and understand the importance of what they were studying. At the museum event pupils could explain confidently to their parents what they had been learning and why.

**School context, colleagues involved**

Fairlawn is a coeducational; two form entry primary school in South East London with bulge years in Year 3 and Year 6. Our percentage of pupil premium and SEND is below national average. We are part of federation and have a teaching school. Key staff involved in the teaching and learning on this project were our Deputy, Kim Clark and the Year 4 teachers, Rob Evans and Sophie Gifford.

Emily Bruggy, Assistant Head, Fairlawn Primary School, London.

**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.

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 question 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 Head teacher, High View Primary School, Battersea

Improving creating questions to help critical thinking in Year 3, Leigh Primary School.

What did we want to achieve?

I wanted to use critical thinking within a geography lesson to improve class participation and creation of questions.

How did we go about it?

Part A: I created an infographic stimulus using Digimaps. I showed an OS map of the local area with the school highlighted and fast food outlets starred. Children had to use their place knowledge to recognise what the link was between the starred buildings.

Key Questions I gave included:

- What are we investigating? How do you know?
- What questions could I ask you using this map?
- What facts does it tell us?
- What other evidence would be useful?

Part B: We then repeated the activity with SOS High School in Ethiopia using Google Maps.

Key Questions I gave included:

- What kind of food outlets are here?
- What is the same? What is different?
- What questions could I ask you using this map?
- What facts does it tell us?
- What other evidence would be useful?
Part C: We then compared and contrasted what we had gained from the two maps.

Key Questions I gave included:

- Using what you have learnt so far… what would the places look like in the future? What do other people think?
- Why do people have different views on this?
- Which place would you like to live when you are adults? Do you think there will be the same issues?
- Do the conclusions make sense?
- Are your conclusions supported by evidence when giving reasons?

Part D: Two weeks after the initial study, both maps were printed off. The children were able to make decisions in groups of what food outlets might appear based on the population numbers and where they would be ideally located.

How well did we achieve our aims?

Part A: Children made the link quickly between the fast food outlets and the school and began to suggest questions such as: are the children at the school overweight? Do the parents have busy working lives and need the fast food? Does the locality of the fast food restaurants make the children at the school obese? Are they open when the children are leaving? Do the children eat at the food outlets often?

Once one child began the questions, the children soon became more and more engaged and their critical thinking skills became evident. Lots of assumptions were made but they soon realised they had to ask questions to prove the assumptions to be correct or misinformed. The children generally working below age related expectations really thrived and created questions building on the examples given by others. They joined in well within the session and at a much higher participation rate.

Part B: The children we shocked by the Google Maps with only three food outlets shown. They instantly began to create questions and minimal adult interjections were needed.

Independently the children debated if cafes were food outlets and whether they would class it as similar to the fish and chip shops and KFC that are around our school. The discussion was really healthy and after a while there was no conclusion. The children understood each other’s views and didn’t know who was right and who was wrong but handled it in a much calmer way than expected from past experience.

They quickly recognised the differences and again came up with questions that I could ask from using the maps and looking at the distance between the school and the cafes/coffee shops. The children working at age related expectations really thought about it and recognised that they were making assumptions about the lives and careers of parents and wanted to find out more about this to see if their assumptions could be backed up.

Part C: All children found this possibly the trickiest bit as they struggled to see how the areas and businesses would change and needed this breaking down further. When one male pupil did understand, he modelled both asking and answering the questions and modelled this to
this class. He then moved around the class and modelled it group at a time. By the end, all children came up with a rough idea but were very competent at saying which they would prefer to live in/bring children up in. The class was split and were able to begin a debate where they voiced their opinion on this. This was much more successful than debates have been, taking turns and commenting on each other’s points well.

Part D: Two weeks after the initial Critical Thinking study, I printed out both of the maps and gave them the job of decision making. In groups of 5 or 6, they had to decide where gaps were on the map and what places they might need. We looked at the estimated population of the two localities and the groups decided where and what food outlets might be built next. Interestingly, all groups did not place any more food outlets on the local map deciding there was more than enough choice. When looking at the map of Ethiopia, they varied what was placed on the maps but all wanted to provide them with more of a range of food. The reasoning behind this conclusion was because they were all now going to school and so would be working soon and could afford to eat at more food outlets. Only two out of the 5 groups placed a fast food outlet (either KFC or McDonald’s) yet all groups placed restaurants such as an Indian restaurant, an English restaurant, a Chinese restaurant, a Greek restaurant based on giving them a variety of restaurants from around the world so that they could experience a variety of food.

What was the impact on pupils?

The children were keen to ask the questions and were engaged fully with the creation of the questions, perhaps as there was less pressure to actually answer them. They bounced off each other’s ideas well and when predicting answers were showing high order thinking. The learning was enhanced by peer support hugely. Children working below age related expectations achieved the objectives and thrived on it being oral and being able to bounce ideas off each other.

The children went much deeper than expected due to the nature of the questions. They were definitely engaged straight away by having it beginning with something they all recognised and could talk about personally. By then moving it away they were able to compare their ideas and thoughts with more confidence.

Within the three sessions the impact was incredible, both engagement and achievement. The children were able to improve their geographical learning, meeting the objectives covered. The children’s participation increased and they used higher order thinking within the lesson. As their participation increased, they were more welcoming to different approaches and working using their ideas as well as those of others. After the sessions, they were incredibly proud of their own achievements and have spoken about the activities lots since.

Other outcomes:

Since this study, I have used more hooks, such as infographics, to begin lessons. This is when the children have to make the links and has defiantly enabled all children in the class to join in. Our first unit in the new school year is based on comparing three localities. The teaching strategy used in this case study is the approach that will be rolled out across Lower
Key Stage 2. This approach to teaching and learning will be shared and modelled with colleagues during Geography coordinator time and during staff meetings with the idea that it will be brought into the curriculum as a part of all subjects.

School context

Leigh Primary School is a larger-than-average primary school; the majority of pupils are from minority ethnic backgrounds, of which the largest group is Bangladeshi and over half of the pupils speak English as an additional language. The proportion of pupils known to be eligible for the pupil premium is above average. This case study took place in the single Year 3 class with the class teacher and with support from the teaching assistant.

Victoria Peart, Year 3 class teacher at Leigh Primary School.

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 did not 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.
Has Christmas lost its true meaning? Queen’s Crescent Primary School, Chippenham.

What did we want to achieve?

Questioning has been an area of focus for our school. Several members of staff have done a great deal of CPD surrounding the use of questioning and how we can use this to boost our children’s attainment. Blooms Taxonomy is used in planning and each topic has a Big Question. Within the classroom we use a wide range of strategies when asking questions such as:

- pause, pounce, bounce,
- no hands up,
- random selection,
- think, pair, share, etc.

Our current class have a high level of need: SEN/D (mainly ASD), as well as a significant number of very vulnerable learners. We are keen to promote their ability and confidence to think for themselves and to be able to ask questions. In short we want them to take more responsibility for their own thinking and learning. However, we have noticed that across our Year 3 and 4 cohort, the children’s ability to ask questions is limited; many struggle to even ask a basic questions, many still lean towards closed, small questions.

Through this project we hoped to encourage our children to take a risk and ask bigger questions; questions which they may not have the answer to. We are also exceptionally lucky to have a SCITT (School-Centred Initial Teacher Training) student working in our classroom and so this was an ideal opportunity to discuss and model excellent practice.

The aims for the project were to:

- model good practice when questioning (including no hands up, random selection, PPB, etc.) for our student teacher,
- encourage the children to ask bigger, more open questions
- have greater confidence when sharing their ideas and views.

How did we go about it?

We began our topic by talking about what the children already knew about Christmas. We then focused in on their experiences of Christmas, recording their responses regardless of their religious background. Next we looked at a range of symbols and asked the children what they showed. We then asked the children to think of and draw as many different Christmas symbols as they could.

The children then grouped these symbols anyway they liked, which they then shared with the class. We encouraged the children to ask someone else to share their ideas once they had finished so that they were directing the questions rather than it being teacher focused. We
discovered that many needed a formal structure for doing this so gave them the sentence starter: What do you think…?

Then, using the pause, pounce, bounce strategy and no hands up, I guided the children through grouping them into two groups; those signifying the Christian meaning of Christmas and those which are commercial.

Later in the week two of our children went to a workshop led by our RE coordinator where they learned about the Christingle and what each part represents whilst making one each. During the next lesson these children became Experts and led a mini-lesson in what they’d learned. The rest of the class then went on to create Christingle cards, talking about what each section represented based on their teaching by their peers.

Then, using some Blooms prompt cards, we asked the children to think of some questions they could ask (although they may not know the answers to) about the True Meaning of Christmas. We encouraged them to be as creative as they could and to try and ask one question from each colour.

To extend our more able children we asked them to work with a partner to ask a question, give a response and then ask another question. The transcript of a conversation between two Year 4 children is below, highlighted are the questions they asked related to the cards:

I: Can you describe what Christians do at Christmas?
A: They go to church and make Christingles to help them remember that Jesus was born and he was very very important. Super important!

What do you do at Christmas?
I: we don’t go to church, only the carol service for school. But we have a big dinner all together, my mum, dad, sister, nan, and sometimes my cousins. We get up really early and open our presents too. Mum makes us go for a walk on Christmas day. It’s boring.
We sometimes go to my grandma’s. But we aren’t this year. I don’t like the carol service for school. It’s too squashed. But we go to church. Oh! Does that mean we are Christians?

We finished the topic with a cohort debate. All the children were asked the question: Has Christmas lost its true meaning? They were asked to move to a different place in the room for yes, no, or not sure. Children then invited others to share their views on the question. After a variety of children had spoken the children were asked if they wanted to change their place (view). Some who had moved were then asked why they had moved. Interestingly many were swayed by the explanations of their peers.

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

The children became noticeably more confident in asking questions. The quality of their questions and the depth at which they probed has improved especially when given the framework to help them structure their questions. At the beginning of the new spring term the SEN/D were markedly more able to think of a range of questions about our new topic.

We were delighted to see a much wider range of children offering their ideas in lessons. Some of our most timid children were confident to explain their thinking to the class.

The children became more focused on the questions an adult was asking and were exceptionally keen to be the recipient of the ‘bounce’ from a peer. With more practice they will become better able to bounce these questions more successfully without adult support.

Our student teacher has begun to use the no hands up strategy and has introduced lolly sticks for random selection. She has also been including some of the Blooms questions in her planning.

**What was the impact on pupils?**

By the end of the series of lessons the children were each able to complete the assessment task. They were able to think beyond their own experiences and use their knowledge to help them answer more complex questions.

Generally our children are able to recall facts about religions (AT1 blue below). However, we notice that the children were better equipped to be able to answer the more complex (AT2) questions. Whilst levels are now outdated, a significant number of our children were working in Level 4, above their Age Expected outcome.
Other outcomes:

As a result of the project I have refocused on questioning to encourage my pupils into deeper thinking. I am asking more complex questions of the children and expecting them to ask questions themselves. Interestingly our SEN/D children have risen to the challenge of asking more complex questions and the formal structure has really benefitted their speaking skills.

School context, colleagues involved

Queen’s Crescent Primary School is a larger than average-sized two form entry primary school, in North Wiltshire. The school converted to academy is September 2014.

Charlotte Goodyear, Year 3 and 4 class teacher and PSHE Coordinator and Wendy Matthews, Year 3 and 4 class teacher and Deputy Head; Queen’s Crescent Primary School, Chippenham.

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 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.

Enhancing critical thinking in geography: Russell Scott Primary School

What did we want to achieve?

We wanted to introduce critical thinking to Year 5 and particularly give it a Geography focus. The children have not had any previous lessons in critical thinking and an introductory session which linked to their interests and learning was planned for. We hopefully wanted them to see the links between critical thinking in Geography and critical thinking in other subjects. This would then enable the children to apply critical thinking strategies across the curriculum.
How did we go about it?

Before the session, the children were asked what they thought critical thinking was and had to record their responses on a post-it note.

As the children were already interested and engaged in the weather, in particular the names given to storms, I devised a critical thinking activity where children would be able to discuss how and why storms are named, firstly by researching it using a newspaper article. The children had to read their article in learning partners and discuss the key things they found. They discussed what answered their initial questions of ‘How and Why are storms named?’ Then they had to think about other things they had learnt from the article and anything else interesting they had found. They had to highlight them in the text. Once they had highlighted key areas, we discussed what we had found as a class. After addressing our initial questions, following on from pupil discussions, we also discussed other areas where human names might be used. We looked at the following questions:

- What could we name the next storm?
- Should we give human names to other natural threats?
- Pets shouldn’t have human names! Do you agree?
- Would you describe humanity as important or insignificant?

The children worked in learning groups to answer these questions and give reasons for their answers. They use post-it notes to record their responses and they were able to make their way around the classroom to answer the others. Once they had completed the questions, the children were able to go back around and read what other people had put. They then had the opportunity to think about how this compared with their views.

As a class, we then discussed and debated the new questions, thinking about them critically. The children were able to share their initial ideas and other children were able to question them, which in turn got the children to question themselves.

When the session had been completed, the children were asked to link back to the original focus of the lesson. The children were asked what critical thinking was. They all wrote their answers on a new post-it and compared it to the one they had written at the beginning. The children then shared what they had learned about critical thinking and how they could use it in other lessons and areas of the curriculum.

How well did we achieve our aims?

This session was completed in both the Year 5 classes. One by myself and one by my colleague. The classes had different responses and thoughts throughout the session. Both classes came up with simple ideas linked to critical thinking (mainly linked to using your brain and thinking about ideas) at the beginning of the session. However, they differed when linking critical thinking back to the tasks they had completed.

One class thoroughly engaged with the task and carefully thought about their responses to each question posed. As they were given plenty of time to discuss and debate their answers, it gave them lots of time to think critically about what they were asked. Furthermore, it gave the children plenty of time to think critically about their own answers.
Were they right? Could something else impact on the response they had given? For example, when looking at the naming of storms, we looked at the naming of other inanimate objects (as this was something suggested by a child). This prompted lots of discussion about natural threats and pets. They debated many ideas such as natural threats having the name of the person who discovered it (to give them credit) and not naming storms after humans as we could name a whole host of things (as humans discover a lot of things).

As the lesson was set up in a non-threatening environment, where every opinion was valued but could be challenged, the children were able to critically evaluate their own and others responses without feeling they had got something wrong. When asked to think about what critical thinking was at the end of the lesson, they had a better understanding and more ideas about it. They could also see how critical thinking could be used in every lesson. For example, when examining a picture in Literacy.

The second class which took part in the lesson, struggled to think critically. They could not see past their own initial responses. When getting feedback from the class teacher, it was decided that they needed more work on general thinking skills and looking at different points of view.

**What was the impact on pupils?**

The pupils were all engaged as it was something they were interested in and had asked about. They loved being able to ‘think outside the box’ and suggest reasons why certain things might happen. They also liked the fact they could discuss their answers and challenge other peoples in a non-threatening environment. They also liked the fact they could change and develop their initial ideas if they wanted to. Because of this, every child felt they had succeeded. Also, they were able to see progress in their learning by having plenty of opportunities throughout the lesson to revisit their original thoughts and responses.

As this was the first explicit critical thinking session, it was important to discuss the links to other subjects and the children were able to identify ways in which this type of session could be used. They also discussed how it could be used to further geography learning.

**Other outcomes**

The session made me think about how critical thinking can be used across the curriculum to help develop a range of skills, for example, debating. I have already shared my practice with my year group partner; I will be sharing it with the rest of the staff as part of the new geography curriculum. Due to my colleague’s feedback, thinking skills in general needs focusing on across school, however, hopefully by sharing the activities I have done, staff will see that they are simple to do but incredibly beneficial. This was only a simple introduction to critical thinking, but something which could be incorporated into lessons easily.

**School context**

The school is a two form entry school in Tameside. The colleagues which are involved are the UK2 phase.

Katie Ashton, Middle Leader, Russell Scott Primary School.
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 straight 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.
How is Christmas celebrated around the world? Westrop Primary School, Swindon.

What did we want to achieve?
To find out how Christmas is celebrated in Finland, Lebanon, Australia, Switzerland and Belgium.

How did we go about it?
I used my personal contacts to write letters to my class. Year 3 children worked in mixed ability groups. They were challenged to think about how Christmas is celebrated and whether everyone’s experiences of Christmas around the world are the same: What similarities and differences are there? Are there any stereotypes that need challenging?

- In three words what does Christmas mean to you? (on post its)
- How is Christmas celebrated around the World? Pupils annotated in groups an A3 world map with what we know about Christmas around the World (five countries highlighted).
- Each group picked out of a hat their research country; information from websites was also available.
- In pairs or individually, children produced some information about how Christmas is celebrated in a format of their choice e.g. leaflet, poster, etc
- Children shared with the rest of the class what they found out. What was the same/different? Which information was better for this task and why?

How well did we achieve our aims?
The lesson showed good learning. The children thought of many similar words that mean Christmas including Jesus, fun, presents. They thought that some countries might celebrate differently from them, but they weren’t sure how. There was a lot of excitement over the letters and they quickly established that although there were some similarities e.g. Christmas trees, families, presents, there were also a lot of differences including the main date of the celebration, types of food eaten and the name of Father Christmas himself. We also discussed how reliable the internet information was over the letters from people.
What was the impact on pupils?

The children now know about different Christmas traditions from five other countries. They have more awareness and appreciation of how different countries celebrate the festive season. All children were very engaged, all contributed to sharing something they discovered. Deeper questioning made the children think about the reliability of the source of the information and why we were trying to find out about Christmas in other countries.

Other outcomes:

By using my personal contacts to write letters to my class, the children were really engaged and keen to find out more. The children worked cooperatively with each other, there was a lot of excitement when they discovered things and they were excellent at communicating their findings with the whole class. The head teacher asked them to share their work with the whole school the following week, enabling the children to showcase their work to others and the whole school to be involved in this project. I also sent photos of their work to the people who wrote the letters.

I saved all the letters and lesson resources on the school server then emailed all the teachers and explained my lesson and invited them to use the resources if they’d like to.

The children told me that they like learning about different things from around the world. Finland is our host country this term and we do a lot of joint projects with our partner school in Lebanon.

Fiona Christopherson, class teacher, Westrop Primary School, Swindon.

Using Critical Thinking to Develop Comprehension Skills: Woodfield Primary School, Plymouth

What did we want to achieve?

My aim was to incorporate critical thinking teaching and opportunities into the already recently reviewed teaching of reading comprehension. My intentions were to aid development and progress of comprehension but also to encourage children not to take things at face value and provide more experience of topics in the wider world.

How did we go about it?

As a trial in Year 6, I experimented with a few different techniques and opportunities to encourage children to think critically. As we had recently re-vamped our reading sessions, I had to be careful not to bolt on ‘yet another thing’ to our already rammed curriculum; I wanted to be able to adapt the new reading comprehension sessions and encompass critical thinking skills. This was also important to me as I feel critical thinking is a skill that underpins the whole of the curriculum, and for us in Primary, leaving this to be covered once a week (if you are lucky) through Geography/History, would not raise the profile of critical thinking or give it enough exposure to have an impact on the children’s learning, thinking and education as a whole.
With all of this in mind, at the beginning of my reading comprehension sessions as a sort of warm-up/recap, I experimented with using a few different strategies to encourage the students to think critically. Firstly, I used Six Word Stories.

I felt I had to provide the children with some sort of scaffolding so I dabbled with the Thinking Hats model, but found that this needed more work and implementation (still possible in the future). I created some questions based on the 5Ws, which the children already use, slightly differently, in their reading sessions.

These questions helped to structure our discussions and we referred to the Thinking Hats as well. They were:

- Who is saying it?
- What's happening?
- Where’s the evidence?
- When can you relate to this?
- Why is it important/significant?

The level of conversation and articulation of the children reasoning and justifying their thoughts was impressive and has certainly built each time we have used a Six Word Story.

The second strategy I used was to use a carefully selected picture book as a platform for critical thinking. I chose the story ‘Voices in the Park’ by Anthony Browne which is probably befitting of a Key Stage 1 audience. However, the hidden meanings in the text, but often the illustrations, allow the story to be used with the older children – and can be really eye-opening for adults too! With the picture book, we followed the 5Ws less and discussed how the characters were feeling and what was going on a lot more.

The third aspect, which I have resourced but am yet to trial, involves more of a non-fiction aspect. I originally felt that newspaper articles would broaden the children’s understanding of the world; make cross-curricular links; offer a multitude of discussion around bias and provide a medium of critical thinking that was increasingly being pushed out of the curriculum. However, I found it very difficult to source articles that were age appropriate, would have been of interest as well as provided the necessary material to use the question stems. Eventually, after many hours, I found a website that did a lot of the work for you. https://www.studentnewsdaily.com/daily-news-article/say-hello-to-snap-inc/ Here you can
download articles, questions that involve comprehension /critical thinking. The age appropriateness is still not great but I have cherry-picked a few articles which I intend to trial.

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

Next week we have an assessment week where we will actually have hard data of reading comprehension test scores, before and after these new strategies have been used over the past 6 weeks. Saying this, the data will not be reliable as there are too many other factors and variables involved. However, there is clear engagement and enthusiasm when using the two out of three strategies trialled so far and the children, when questioned, admit to enjoying the sessions. I would imagine that the freedom of thought, the current expectation to develop skills orally and not through written methods is probably quite refreshing! The icing on the cake, however, was during a lesson observation (!), when inferring what we could from a picture of a character standing alone in a room, one girl said, "He could be lonely and down-hearted, but he could have just moved to the house and that's why the room's empty and he’s looking out of the window to familiarise himself with his new surroundings." This was during a ‘writing’ session where we hadn’t even mentioned critical thinking, until she said the above.

**What was the impact on pupils?**

In terms of impacting my teaching, it has made me aware of how much written work I expect the children to carry out. Furthermore, I have realised how liberating it is for me to just ‘go with the flow’ and let the discussion steer its own path. I have found it very levelling to explain to the children that there are no right or wrong answers and love it when the children think of things that have never even entered my mind.

After some tweaking, there is certainly scope for me to roll this out whole-school and I feel that if I hold some staff INSETs and provide the support for more newly qualified colleagues, who may typically find the ‘thinking on your feet’ and ‘go with the flow’ style of discussion more challenging, there is a model that could run alongside, and within, our new reading sessions – at least to begin with.

This has only been trialled in my class over the past five weeks. I have 23 children in my class aged between 10-11 years old and have used the above model three times a week. The next stages would also be for the children to pose more questions.

Lottie Bond Year 6 Class Teacher, English Lead, Woodfield Primary School