Critical thinking and problem solving: the impact on teaching and learning

This project has opened up so many doors both academically and philosophically for the children (Charter Primary School, Chippenham).

As part of the British Council’s Connecting Classrooms Programme, 800 teachers took part in CPD to develop their understanding and practical strategies for critical thinking. 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. Their reports demonstrate a range of approaches to critical thinking in primary and secondary schools and colleges. Teachers have applied these in a range of curriculum areas including geography and history, as well as often developing literacy skills; particularly speaking and listening and writing.

The impact of critical thinking on learning

The great majority of reporting teachers describe significant impacts on their pupils’ learning resulting from the CPD in critical thinking and its application in their classrooms. Although there are no formal assessment and recording arrangements for geography or history in Key Stages 1-3, a number of teachers’ Assessment for Learning strategies identified significant impacts on learning, progress and achievement. Some schools explicitly monitored teaching and learning before and after their critical thinking work, for example through lesson observation and pupil feedback. Some secondary schools were able to focus on the impact on achievement of GCSE and A level students.

Primary school examples include:

- At Dacre Braithwaite School, careful investigation of sustainability at the school enabled Year 1 children to become more confident in raising and responding to questions and engaging in high quality discussions, whilst enhancing their deeper thinking skills, with ‘A significant impact on our children’s learning’.

- At Shaftesbury Park Primary School, monitoring of a whole-school approach to improving teachers’ and pupils use of questions showed measureable increases in the quality and number of questions used by pupils, resulting in greater depth of learning, higher quality discussions and improved listening skills.

- Similarly, monitoring at St Joseph’s Catholic Primary School showed clear evidence of improvements in questioning and engagement by pupils and teachers, leading to its adoption ‘as a whole school approach to raise the achievement of our learners’.

- At Central Park Primary School, a well-planned investigation of deforestation in Amazonia in Year 6 geography led to class discussion and debate and resulted in ‘Writing produced at a
very high standard as children … were able to use a vast range of sentence starters and many other grammar and spelling objectives linked with English’.

- At Christ Church Primary School, work on Victorian images in Year 5, with a particular focus on closing achievement gaps, resulted in ‘Progress in the pupils’ learning … and how they were able to ask higher order questions; more open and flexible thinking was also apparent from the whole class’.

- At Queen’s Crescent Primary School, a Year 3/4 class, many with SEN, critically investigated the meaning of Christmas in RE. ‘By the end of the series of lessons the children were able to think beyond their own experiences and use their knowledge to help them answer more complex questions’ with a significant number working above their age expected outcome.

Secondary schools had a particular focus on improving standards through critical thinking and on GCSE and A level outcomes. Many schools took a long-term approach to this, developing the skills from Key Stage 3 onwards which would ensure exam success, particularly targeting those aspects which pupils find challenging, such as applying geographical understanding in extended writing responses.

- Abbeyfields School, Chippenham, made careful evaluations before and after the project through lesson observations and pupil voice interviews in geography. The teacher reported that ‘Students are more engaged in their learning and confident that they will be challenged and able to be successful at GCSE and A Level. As a result, retention levels for geography from Key Stage 3-4 and Key Stage 4-5 are exceptional, and geography results at Key Stage 4 and 5 extremely strong. Due to increasing participation through questioning, students are now more successful and, on the whole, make better than expected progress’.

- Similarly, Bishop Justus CE School focused on deep thinking in Key Stage 3 geography as a key area for improvement, identifying critical understanding as a key requirement for GCSE and A level exam success. The teachers made a base-line assessment, repeated after the intervention. ‘Overall the impact was very positive, with students more engaged in topics and a clear focus developing on challenging ideas and thinking critically … geography can be made more challenging for these students by getting them to question and challenge concepts and ideas, which will assist them greatly at Key Stage 5’.

- Using critical thinking to evaluate the evidence for climate change in Year 7, a geography teacher at Falinge Park High School then used formative assessment to test pupils’ new understanding. She found ‘A definite increase in deeper understanding of climate change, (and) the quality of writing produced by the students was at a much higher level, (together with) a greater engagement in questioning the evidence provided’ She reflected this was unusual in Year 7 pupils, who became more engaged and wanted to investigate further in their own time.

- Maidstone Grammar School for Girls focused on improving stretch and challenge through independent learning, and reported improvements in learning and achievement across all key stages, but particularly targeting the 70-mark research essay at A level. ‘Our Year 13
students showed significant improvement in their methodology section ... students were able to confidently discuss the reliability, credibility, bias of sources. Some were also able to link the evaluation of the sampling of their resources to the validity of their conclusions’.

Schools also reported a range of broader indicators of pupils’ learning gains as a result of their teaching of critical thinking, particularly improved levels of understanding:

- The great majority of schools reported improvements in pupils’ engagement, together with confidence and motivation to study
- Many primary and secondary schools reported improvements in vocabulary, discussion and communication skills; whilst important for attainment in literacy, these capabilities are key to geographical thought and developing understanding. A particularly noteworthy outcome in some schools was improvement in the quality of extended writing and, in a number of schools with sixth forms, in essay writing.
- Developing the ability to listen carefully and consider different viewpoints verbally and in writing, an important aspect of geographical enquiry and an important skill to develop detailed responses in examination classes.
- Engaging in higher order questions, more careful active and deeper thinking, ‘a problem for students who must be able to demonstrate this in depth ... with a greater focus nowadays on detail and justified thinking as core constructs that enable success at GCSE’ (Braunton Academy).

These outcomes often had particular benefits for less successful learners; in addition some schools noted benefits for children with EAL. A significant number of schools noted that the additional level of challenge also stretched more able pupils.

For example a Year 3 teacher at Leigh Primary School investigated food outlets near their school, compared with a partner school in Ethiopia. She reflected:

The children went much deeper than expected; they were definitely engaged straight away by beginning with something they all recognised and could talk about personally. Within 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.

A teacher at Chesterton College worked with a geography GCSE group studying urban development to improve their approach to medium-tariff exam questions. She concluded:

Students’ responses were stronger, with more developed ideas which were evident in their responses to the exam question. Their verbal responses in class were very detailed and critical when discussing how slums might be improved, questioning fellow students’ responses. They were able to debate their ideas, which reinforced critical thinking and
encouraged further questioning. Students had more autonomy and they were more passionate about the subject matter as it made them think about the topic ... more critically in greater detail.

The impact of CPD in critical thinking on teaching

The CPD focused on developing teachers’ understanding of different contexts for critical thinking, combined with exploration of a range of tools supporting critical thinking to try out or develop in their own classrooms. Many teachers reflected on their improved confidence, the impact on their teaching, and ways they were disseminating their new professional knowledge to colleagues. Moreover during the course of the programme some had received positive feedback after being observed teaching.

As a result of this project, I 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 ... as the children are always engaged, make fantastic contributions and share great insights which often develop their own and other children’s learning (Emily Bosomworth, Dacre Braithwaite Church of England (VA) Primary School).

As a result of the project, lesson observations have seen an increase in teaching practices that promote and celebrate questioning from pupils (and) an increase in the quality and frequency of questioned asked (James Tristram, Shaftesbury Park Primary School).

This project had a strong and important impact on my teaching. It helped me to think more critically about planning lessons, ensuring I had more questioning techniques to encourage student participation and get them to develop ideas further (Carrie Carter Chesterton Community College).

I believe the quality of my teaching has improved in order for me to challenge student perceptions further, as well as making synoptic links between topics in class. As a department we are going to embed critical thinking into a range of assessments, in order to challenge students understanding of topics further, in order to prepare them for new GCSEs. I think others will learn from this practice that when teachers take risks in a lesson it is very rewarding when students are challenged and engaged, as long as it is delivered at the right level (Kelly Peppin, Christ the King Catholic High School and Sixth Form Centre).

This project helped to focus my teaching on exam technique and the important skills needed, rather than just content. Seeing the impact on students and their confidence growing gave me more faith in my teaching skills (Hina Robinson, The King John School).

Dr John Hopkin, Geographical Association, February 2018

Primary School reports
Secondary School and College reports