



"I am delighted to introduce you to this exciting and very successful piece of work. The continued drive to raise standards of achievement for all children and young people means taking a closer look at where particular groups appear not to be achieving as well as they could. In West Berkshire, one of these areas is mathematical achievement in the primary phase, especially of girls and those who have the potential to achieve highly.

This pilot project has explored how the principles of cognitive acceleration in mathematics developed for older children can be applied to younger children in years 5 and 6. It is worth noting that nationally there has been very little material produced in this arena for practical use in classrooms.

It is therefore very heartening to see colleagues developing new approaches and materials that will work in the classroom and which bring a sense of challenge and fun to mathematics in a way which promotes and delivers higher achievement. My particular thanks go to the members of the School Improvement Team and to the headteachers and teachers in the pilot group of schools who have all put a great deal of additional effort into this project."

Andy Tubbs
Chief Adviser for School Improvement

During the year 2003-2004, the local authority numeracy consultant received training on CAME from the Cognitive Acceleration Associates team, based at the Islington Education Action Zone office. The expectation of the training was that teachers would then trial three or four lessons with their classes and report back at the next session. In West Berkshire, this meant that a class had to be "borrowed" in order for the numeracy consultant to do this.

School-based support work for numeracy consultants takes a variety of forms; during 2003-2004, a significant number of schools were beginning to highlight relatively poor levels of oracy as one of the barriers to developing reasoning and communication in mathematics, and it quickly became obvious during the CAME training that here was an approach with a great deal of potential to support this issue. The class had a wide range of ability, from pupils working significantly below the national expectations for year 6, to a small group with potential to secure level 5 in some aspects of mathematics. The teacher had already done significant work in enabling pupils to develop social skills and work together, but there were still some who were unable to participate comfortably in group discussions for very long.

The consultant and teacher worked easily together; the CAME lessons are so well-structured that it is not a difficult matter to join in/step back at any time in the lesson, and the pupils soon became used to this. In fact, they adjusted so quickly that the improvement in their willingness to talk to each other, to the adults and to the rest of the class soon became very apparent. The teacher continued to use CAME on a regular basis and to plan the basic techniques and principles into other areas of the curriculum. The class soon began to recognise what they called "thinking moments".

The project began in September 2004 with year 5 and 6 teachers in 12 schools. an INSET session for one teacher (year 5 or 6) from each school.

During the year, the numeracy consultant shared teaching with as many of the project teachers as possible, thus gaining valuable insights into the capacity of pupils to think and explain. It also provided an opportunity not often available to teachers: that of repeating a lesson with more than one class, thus being able to adjust teaching in the light of previous experiences and, equally importantly, to share these experiences at regular meetings with the project teachers.

As the year progressed, it became increasingly obvious that teachers and pupils were thoroughly enjoying being part of the project. The teachers were asked to keep a "log-book", recording anecdotal information about each lesson, for example, the pupils' responses, examples of insight into learning, comments and quotes from pupils, or any adaptations they felt might be necessary in future. They were also asked at the end of the year to produce a brief case study using this information. These are typical of some of the comments teachers made:

"After this pilot project I feel the class co-operate more with each other and are now more prepared to listen to the methods others have used.

They appear less anxious when committing their thoughts and ideas to paper and will attempt activities using methods they are familiar with. Their discussions have more focus and in other subjects or regular maths lessons they are happy to share their results even if the final answer is not accurate. They love the challenges offered through CAME."

"The main impact of CAME has been the improvement in the pupils' ability to problem solve. By letting the children work in pairs and small groups it gives children the confidence to discuss possible solutions and try out new ideas. They feel secure working in this setting and I have found they are much more motivated for problem solving as the context for each lesson is very engaging and easy to set into a real life context. It is something that the children can visualise and relate to."

"The hardest concept to accept when I began teaching the CAME lessons was the different role of the teacher. It is your role to guide the children but say as little as possible. Your role is not to give the children the right answer but to guide their thinking. Due to the fact that in CAME lessons you ask open ended questions it can be a challenge as you do not know exactly what direction the lesson will take. Teaching the CAME lessons has enhanced my skill of asking open ended questions and encouraging the children to explain their thinking further. I have been able to use the teaching methods and strategies of CAME in other areas of the curriculum. In particular within History we focused on the CAME questioning skills. This improved the children's explanations of their ideas as they were used to explaining and justifying their opinions."

The pupils also expressed their opinions in a questionnaire:

How do you think your teacher feels about CAME?

- "She's pleased because we can think for ourselves"
- "I think she likes it because she smiles a lot."
- "I think she likes it because we all do"

What can you say about working in groups?

"I think it's good because you get to work with new people"

"It helps you say out your ideas"

"Sometimes the ways I work things out doesn't always work and my team mates are doing different ways that work so I learn a new way"

"It's good because more brains are better than one".

Is there anything you particularly like about these lessons?

"It's more independent and fun"

"I like trying to solve things out"

"It's sort of experimenting and that's different"

"I like not spending too long on one activity".

"I feel more comfortable when I have to do it again on my own".

**A full evaluation of the project is available; for more information contact
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