

CAME course materials:

- Adey, P., Robertson, A., & Venville, G. (2001). *Let's Think!* Windsor: nferNELSON
- Adhami, M., Johnson, D.C. & Shayer, M. (1998). *Thinking Maths: The Programme for Accelerated Learning in Mathematics*. Oxford: Heinemann Educational. [A major outcome from the CAME research 1993-97.]
- Adhami, M., Johnson, D.C., Shayer, M., Hodgen, J. Hafeez, R., Dubben, S., Longfeild, A., Harvey, L., Hindshaw, J., Davidson, M. (2002) *Thinking Maths in the Primary School*, BEAM Publications.
- Adhami, M., Shayer, M. & Twiss, S, (2005). *Lets Think through Maths! 6-9*. London: nferNelson
- Shayer, M. . Adhami, M., and , Robertson, A. (2004). *Let's Think Through Maths!: Developing thinking in mathematics with five and six-year-olds*. London: nferNelson.

Key Cognitive Acceleration texts

- Adey, P., & Shayer, M. (1994). *Really Raising Standards*. London: Routledge.
- Adhami, M. (2002) Cognitive Acceleration in Years 5 and 6 : problems and Challenges. In Learning Intelligence, (Eds. M.Shayer and P. Adey) Open University Press, 2002. pp 99- 117
- Shayer, M. & Adhami, M.(2004). Realising the cognitive potential of children 5-7 with a mathematics focus. *International Journal of Educational Research* 39, 743-775.
- Shayer, M., & Wylam, H..(1978). The distribution of Piagetian stages of thinking in British middle and secondary school children II: 14 -16 year-olds and sex differentials. *British Journal of Educational Psychology*, 48, 62-70.
- Shayer, M. & Adhami, M. (2006). Fostering Cognitive Development through the context of Mathematics: Results of the CAME Project. Accepted for publication by *Educational Studies in Mathematics*.

Classroom practice and professional development

- Adhami, M., Johnson, D.C. & Shayer, M. (1995) Cognitive Acceleration through Mathematics Education - Towards a theory of instruction and instruction. Paper presented at the British Congress of Mathematics Education (BCME) July 1995
- Adhami, M., Johnson, D.C. & Shayer, M. (1996). Theory-based lessons as a focus for professional development. Paper presented at the 8th International Congress for Mathematical Education (ICME-8), July 1996.
- Adhami, M., Johnson, D.C. & Shayer, M. (1998). Cognitive development and classroom interaction: A theoretical foundation for teaching and learning. In D. Tinsley & D. Johnson (Eds) *School Mathematics in the World of Communication Technologies*. London: Chapman & Hall, 205-214.
- Adhami, M. (1999). The challenge of whole class teaching. *Equals*, 5 (2), 5-9. London, Mathematics Association
- Adhami, M. (2000) Where Do Good Questions Come From? *Equals*, 6 (2), London, Mathematics Association, pp14-17
- Adhami, M. (2001) Three thinking questions, *Equals*, 7 (2), London, Mathematics Association, pp 4-5
- Adhami, M. (2003) From lesson objectives to lesson agenda.: flexibility in whole class lesson structure, in Thompson, I. (2003) *Enhancing primary mathematics teaching*, Open University Press pp 65-77
- Adhami, M (2001) Responsive Questioning in a Mixed Ability group, *Support For Learning* 16.1 *NASEN*, pp 28-34
- Adhami, M. (2000) Peer Evaluation of Whole Class Teaching. In *Proceedings of the British Society for Research into Learning Mathematics Day Conference, University of Loughborough, 6 May 2000*. London: BSRLM, 42-48
- Adhami, M. (2000). Framing investigation for whole class teaching. *Mathematics in Schools*, 29 (3). Mathematics Association, 15-19
- Adhami, M. (2001) Two Cheers for the National Numeracy strategy, *Equals* 7 (1), London, Mathematics Association, pp 8-10

- Adhami, M., Johnson, D.C. & Shayer, M.(1999). Tensions in Planned Mathematics Lessons. *In Proceedings of the British Society for Research into Learning Mathematics Day Conference, University of Warwick, 13 November 1999.* London: BSRLM, 35-41.
- Adhami, M., Johnson, D.C. & Shayer, M (1995). Cognitive Acceleration Through Mathematics Education: An Analysis of the Cognitive Demands of the National Curriculum and Associated Commercial Schemes for Secondary Mathematics. *In Proceedings of the Joint Conference of the British Society for Research into Learning Mathematics, BSRLM, and the Association of Mathematics Education Tutors, AMET, Loughborough, 19-20 May 1995.* London: BSRLM, 1-6.
- Adhami, M (2003) First steps in handling data. *Equals*, London, Mathematics Association. 9(3), PP12-15
- Johnson, D.C., Hodgen, J and Adhami, M.(2003) Professional Development from a Cognitive and Social Standpoint. *In Millet, A, Brown, M. Askew, M. (Eds.) ., Primary Mathematics and the Developing Professional.* Kluwer Academic Publishers. pp 2-208

Research on effects of CA Intervention

- Adey, P., Robertson, A., & Venville, G. (2002). Effects of a cognitive stimulation programme on Year 1 pupils. *British Journal of Educational Psychology*, 72, 1-25.
- Shayer, M. (1999). Cognitive acceleration through science education II: its effects and scope . *International Journal of Science Education*, 21, (8), 883-902.
- Johnson, D.C., Adhami, M. & Shayer, M. (1998). Does CAME work? Summary report on phase 2 of the Cognitive Acceleration in Mathematics Education, CAME, project. *In Proceedings of the British Society for Research into Learning Mathematics Day Conference, Bristol, 15 Nov. 1997.* London: BSRLM, 26-31.
- Shayer, M., Johnson, D.C. & Adhami, M. (1999). Does CAME work (2)? Report on Key Stage 3 results following the use of the Cognitive Acceleration in Mathematics Education, CAME, project in Year 7 and 8. *In Proceedings of the British Society for Research into Learning Mathematics Day Conference, St. Martin's College, Lancaster, 5 June 1999.* London: BSRLM, 79-84.
- Shayer, M. & Adhami, M. (2006). Fostering Cognitive Development through the context of Mathematics: Results of the CAME Project. Accepted for publication by *Educational Studies in Mathematics*.
- Shayer, M., (1999). Cognitive acceleration through science education II: its effects and scope .*International Journal of Science Education*, 21, (8), 883-902.

Cognitive development theory background to CAME

- Baddely, A. (1990). *Human Memory: Theory and Practice*, Hove: Erlbaum.
- Black, P., Harrison, C. Lee, C., Marshall, B. & William, D. (2003). *Assessment for Learning: Putting it into practice*. Maidenhead: Open University Press.
- Bloom, B.S. (Ed.) (1956) *Taxonomy of educational objectives: The classification of educational goals: Handbook I, cognitive domain*. New York: Longmans, Green
- Bruner, J. (1967). *Towards a Theory of Instruction*. New York: W.W. Norton.
- Bryant, P. (1974). *Perception and Understanding in Young Children*. London: Methuen.
- Butterworth, B, (1999). *The Mathematical Brain*. London: Macmillan.
- Case, R. (1992). *The mind's staircase*. Hillsdale, NJ: Erlbaum.
- Collis, K.F. (1978). Chapters 7 & 8 in, Keats, J.A., Collis, K.F., & Halford, G.S. (Eds). *Cognitive Development: Research based on a Neo-Piagetian approach*. New York: John Wiley & Sons.
- Dehaene, S, (1997). .*The Number Sense*. London: Allen Lane
- Dehaene, S, Dehaene-Lambertz, G., & Cohen, L.(1998). Abstract representations of numbers in the animal and human brain .*Trends in Neuroscience*, 21, 355-361.

- Demetriou, A., Platsidou, M., Efklides, A., Metallidou, Y. & Shayer M. (1991). The development of quantitative-relational abilities from childhood to adolescence: structure, scaling, and individual differences. *Learning and Instruction*, 1, 1, 19-43.
- Duncan, J.; Seitz, R. J.; Kolodny, J.; Bor, D.; Herzog, H.; Ahmed, A.; Newell, F. N.; Emslie, H. (2000). A neural basis for general intelligence. *Science* **289**(5478):457-60, 2000.
- Epstein, H. T., (1986). Stages in human brain development. *Developmental Brain Research*, 30, 114-119.
- Feuerstein, R., Rand, Y., Hoffman, M., & Miller, M. (1980). *Instrumental Enrichment: an intervention programme for cognitive modifiability*, Baltimore: University Park Press
- Gelman, G. & Gallistel, G.R. (1978). *The Child's Understanding of Number*. London: Harvard University Press.
- Halford, G.S. (1982). *The development of thought*. Hillsdale, NJ: Erlbaum.
- [Houdé, O. & Tzourio-Mazoyer, N. \(2003\). Neural foundations of logical and mathematical cognition. *www.nature.com/reviews/neuro* June 2003](#)
- Inhelder, B., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence*. London: Routledge.
- Nunes, T. (1999). The role of systems of signs in reasoning. Paper presented at the Jean Piaget Society, Mexico.
- Piaget, J. (1950). *The psychology of intelligence*. London: Routledge.
- Piaget, J. (1953). *The Origin of Intelligence in the Child*. London: Routledge.
- Piaget, J., & Szeminska, A. (1941; 1952). *The Child's Conception of Number*. London: Routledge
- Resnick, L., Bill, V. Lesgold, S. & Leer, M. (1991). Thinking in Arithmetic Class. in B. Means, C. Chelmer & M.S. Knapp (Eds.). *Teaching advanced skills to at-risk students: Views from research and practice*. San Francisco: Jossey-Bass.
- Resnick, L.B., Bill, V. & Lesgold, S. (1992). Developing thinking abilities in arithmetic class. In A. Demetriou, M. Shayer & A. Efklides (Eds.). *Neo-Piagetian theories of cognitive development*. London: Routledge.
- Shayer, M. (2003). Not just Piaget; not just Vygotsky, and certainly not Vygotsky as *alternative* to Piaget. *Learning and Instruction* 13, 465-485.
- Shayer, M., & Adey, P. S. (1981). *Towards a Science of Science Teaching*. London: Heinemann Educational Books.
- Shayer, M., & Beasley, F. (1987). Does Instrumental Enrichment work? *British Educational Research Journal*, 13, 2, 101-119.
- Shayer, M., Demetriou, A., & Pervez, M. (1988). The structure and scaling of concrete operational thought: three studies in four countries. *Genetic, Social and General Psychological Monographs*, 309-375.
- Shayer, M., Küchemann, D. E., & Wylam, H. (1976). The distribution of Piagetian stages of thinking in British middle and secondary school children. *British Journal of Educational Psychology*, 46, 164-173.
- Shayer, M. & Gamble, R. (2001). *Bridging from CASE to Core Science*. Hatfield: Association for Science Education. ISBN 0 86357 3320 The Association for Science Education College Lane, Hatfield, Herts, AL10 9AA, Tel: 01707 283000, Fax: 01707 266532
Booksales...booksales@ase.org.uk
- Shayer, M., Ginsburg, D. & Coe, R. (2006). 30 Years on—an anti-'Flynn effect'? the Piagetian test *Volume & Heaviness* norms 1975-2003. Accepted for publication in *British Journal for British Journal for Educational Psychology*.
- Smith, L. (2002). *Reasoning by Mathematical Induction in Children's Arithmetic*. Oxford: Elsevier Science.
- Spearman, C. (1927). *The abilities of man: their nature and measurement*. London: Macmillan.
- Tanner, J.M. (1978). *Foetus into Man: Physical growth from Conception to Maturity*. London: Open Books.
- Vergnaud (1997). The Nature of Mathematical Concepts. Chapter 1 in T. Nunes & P. Bryant (Eds.). *Learning and Teaching Mathematics: an International Perspective*. Hove: Psychology Press.
- Vygotsky, L.S. (1986) (Ed. A. Kozulin). *Thought and Language*. Cambridge, MA: MIT Press

Wright, B.J. & Stone, M.H.(1979). *Best Test Design: Rasch Measurement*. Chicago: MESA Press.

Mathematics curriculum background to CAME

- Adhami, M (2003) By the pan or by the person. *Equals*, London, Mathematics Association, 9 (1) pp 21-23
- Adhami, M (2003) Strategy Games, *Equals*, London, Mathematics Association. 9(2), PP6-7
- Adhami, M. (1999). Playing with Numbers: a Route for Rapid Improvement of Number Skills for Children with Learning Difficulties/Disabilities. A review of Turkish research. *Equals*, 6 (1), London, Mathematics Association, 5-6
- Adhami, M. (2002) Infant Numeracy Matters *Equals*, , London, Mathematics Association, 8 (2) pp 4-8, and 8 (3) pp 14-16
- Adhami, M. (2002) The Paradox of the Textbook, *Equals*, 8 (1), London, Mathematics Association, pp19-20
- Adhami, M. (Series editor) (1998-99). *Maths Direct*. Secondary School Textbooks (A-F), Teacher's Packs 1-3(also in CDs), and Course Guide. London: Collins Educational.
- Brown, M. (1989). Graded Assessment and Learning Hierarchies in Mathematics-an alternative view. *British Educational Research Journal*, 15, 2, 121-128
- Brown, M. (Project director) (1992) *Graded Assessment in Mathematics: Teacher's Guide; Activities volumes 1-4, Topic criteria; Topic Tasks; Student Activities; Cross referencing guide and record sheets*. Thomas Nelson and Sons Ltd
- Cable, J., (1997). A Constructivist theory of Quantities or In Praise of Ratio. PhD: University of London
- Hart, K (Ed), (1981). *Children's Understanding of Mathematics: 11- 16*. London: John Murray
- Kornilaki, K. (1999). Young children's understanding of multiplication: A psychological approach. PhD, University of London
- Noelting, G. (1980). The development of proportional reasoning and the ratio concept. Part I— differentiation of stages. *Educational Studies in Mathematics*, II, 217-253.
- Nunes, T. & Bryant, P. (1996). *Children Doing Mathematics*. Oxford: Blackwells.
- Vergnaud, G. (1983). Multiplicative Structures. Chapter 5 in Richard Lesh & Marsha Landau, Eds. *Acquisition of Mathematics Concepts and Processes*. New York: Academic Press.