



## Recommended and suggested reading and links to other resources

**Cognitive Acceleration** (Let's Think) has a long history and has been used as evidence of changing pedagogy in schools in the UK and around the world. The 2014 Research Excellence Framework (REF, 2014) used Cognitive Acceleration as an example of [impact of research from King's College, London](#):

The **Economics and Social Research Council** (ESRC) summarised [recent studies on Cognitive Acceleration](#)

There is a brief overview of [Cognitive Acceleration on Wikipedia](#)

See also the [Let's Think website](#)

### **Cognitive Acceleration through Science Education (CASE)**

Adey, P. (1999) [The Science of thinking and Science for Thinking: A description of Cognitive Acceleration through Science Education \(CASE\)](#), International Bureau of Education, Geneva, Switzerland

#### **Materials of CASE**

Adey, P., Shayer, M., & Yates, C. (1995). *Thinking science: Student and teachers' materials for the CASE intervention* London: Nelson. 3<sup>rd</sup> edition. Published 2001, Nelson Thornes.

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,

#### **Peer-reviewed papers**

Adey, P. (2005). Issues Arising from the Long-Term Evaluation of Cognitive Acceleration Programs. *Research in Science Education*, 35, 3-22.

Dullard, H. and M. Oliver (2012). "'I can feel it making my brain bigger": Thinking Science Australia." *Teaching Science* 58(2), 7-11.



Hueppauff, S. (2016). Thinking Science Australia: A way to change teacher practice in order to raise students' ability to think. *Teaching Science*, 62(3), 22-28.

Kerr, A. (2016). Readdressing the gender gap in science through the use of Thinking Science program. *Teaching Science*, 62(3), 39-44.

Maume, K. (1998). An examination of the feasibility of running the CASE intervention programme in one academic year. (MSc in Science Education), Trinity College, Dublin.

Mbano, N., (2010). The Effects of a Cognitive Acceleration Intervention Programme on the Performance of Secondary School Pupils in Malawi, *International Journal of Science Education* 25(1) 71-87.

McLellan, R. (2006). "The Impact of Motivational "World-view" on Engagement in a Cognitive Acceleration Programme." *International Journal of Science Education* 28(7), 781-819.

Miller, S., Venville & Oliver, M. (2014). [Cognitive Acceleration](#), chapter in Encyclopedia of Science Education, Springer

Mobbs, E. (2016). Effects of a modified Thinking Science program for Year 8 students of various abilities. *Teaching Science*, 62(3), 45-49.

Moore, N., O' Donnell, J., Poirier, D. (2012) *Using Cognitive Acceleration Materials to Develop Pre-service Teachers' Reasoning and Pedagogical Expertise* ASQ Education Division). STEM Conference Proceedings Vol. No. QICID: 34852, University of Wisconsin-Stout July 16-17, 2012.

Oliver, M., Venville, G., Adey, P. (2012). Effects of a Cognitive Acceleration Programme in a Low Socioeconomic High School in Regional Australia. *International Journal of Science Education* 34(9), 1393-1410.

Oliver, M. & Venville, G. (2015). *Cognitive acceleration through science education: the CASE for thinking through science*, in The Routledge International Handbook of Research on Teaching Thinking, eds R. Wegerif, L. Li, J. Kaufman.

Oliver, M. & Venville, G. (2017). Bringing in CASE from the cold: the Teaching and Learning of Thinking. *Research in Science Education*. (47), 49-66.

Shayer, M., (1999). Cognitive acceleration through science education II: its effects and scope. *International Journal of Science Education*, 21, (8), 883-902.



Smith, T. (2016). Thinking Science Australia: A short history of how thirty science lessons transform learning and teaching. *Teaching Science*, 62(3), 16-21.

Venville, G. and M. Oliver (2015). "The impact of a cognitive acceleration programme in science on students in an academically selective high school." *Thinking Skills and Creativity* 15(0): 48-60.

CASE in Year 7 as experienced and explained on [Teachers' TV](#)

### **Cognitive Acceleration through Mathematics Education (CAME)**

McCormack, L. (2009). The use of CASE to bridge the transition between the primary and secondary school science in Ireland. *School Science Review*, 98, (362), 47-54.

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.

Finau, T., Treagust, D.F., Won, M. et al. (2016). Effects of a Mathematics Cognitive Acceleration Program on Student Achievement and Motivation. *International Journal of Science and Mathematics Education*.

Finau, T., Treagust, D.F., Won, M. et al. (2017). *Tongan Students' Achievement And Motivation Following A Mathematics Cognitive Acceleration Program*. Paper presented at the European Science Education Research Association, Dublin, August 2017.

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 & Adhami, M (2007) Fostering cognitive development through the context of mathematics: results of the CAME project, *Educational Studies in Mathematics*, pp 256-291.

### **Let's Think English<sup>1</sup>**

Smith, L. (2016). [\*Really raising standards in GCSE English: responding effectively to the new specifications and Progress 8\*](#). King's College London.

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<sup>1</sup> NB As Let's Think English is a relatively new project, much of the research into its impact is not yet completed or published.



The Let's Think in English blog: <https://www.letsthinkinenglish.org/blogs/>

## Primary Let's Think

Adey, P., Nagey, F., Robertson, A., Serret, N., & Wadsworth, P. (2003). Let's Think Through Science! 7& 8. A programme for developing thinking in science with seven- and eight- year olds. Windsor: NFER-NELSON.

Adey, P., Robertson, A., & Venville, G. (2001). Let's Think! A programme for developing thinking with five- and six- year olds. Windsor: NFER-NELSON.

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.

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.

Gallagher, A. (2008). Developing thinking with four and five year old pupils: the impact of a cognitive acceleration programme through early science skill development. (MSc by research), Dublin City University.

McCormack, L. (2009). Cognitive Acceleration across the primary-second level transition. (PhD), Dublin City University.

McCormack, L. (2009). The use of CASE to bridge the transition between the primary and secondary school science in Ireland. *School Science Review*, 98, (362), 47-54.

McCormack, L., Finlayson, O.E., & McCloughlin, T.J.J. (2014) The CASE Programme Implemented Across the Primary and Secondary School Transition in Ireland, *International Journal of Science Education*, 36(7), 2892-2917.

Mustafa, S.A.Y., & Jado, S.M.A. (2014) [The Effects of a Cognitive Acceleration Training Program on Developing the Emotional Intelligence among a Jordanian Sample of Sixth Graders](#), *Journal of Education and Practice*, 5(21)

Ryan, S. (2014). Implementing New Pedagogies in Primary Science (PhD), Dublin City University.



Venville, G., Adey, P., Larkin, S., & Robertson, A. (2003). Fostering thinking through science in the early years of schooling. *International Journal of Science Education*, 25(11), 1313 - 1331.

## **Professional Development of and for teachers**

Adey, P, Hewitt, G, Hewitt, J, & Landau, N (2004) *The Professional Development of Teachers: Practice and Theory*. Dordrecht: Kluwer Academic.

Adey, P. (1999). [The science of thinking and science for thinking: a description of Cognitive Acceleration in Science Education \(CASE\)](#). UNESCO

Goulding, M. (2002). Cognitive Acceleration in Mathematics Education: Teachers' Views. *Evaluation & Research in Education*, 16(2), 104-119.

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.

Coe, R., Aloisi, C., Higgins, S., Major, L. (2015) [Developing Teachers: Improving professional development for teachers](#)

## **Key and classical texts from Philip Adey, Michael Shayer**

Adey, P., & Dillon, J. (2012). *Bad Education: Debunking Myths in Education*. Maidenhead: Open University Press.

Adey, P & Shayer, M (1994) *Really Raising Standards*. London: Routledge

Shayer, M (2008) Intelligence for education: as described by Piaget and measured by psychometrics. *British Journal of Educational Psychology*, 78, 1-29

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., & Adey, P (Eds) (2002) *Learning Intelligence: Cognitive Acceleration Across the Curriculum from 5 to 15 Years*. Milton Keynes: Open University Press.

Shayer, M., Coe, D., Ginsburg, D. (2007). Thirty years on – a large anti-Flynn effect? The Piagetian test Volume and Heaviness norms 1975-2003 *British Journal of Psychology*, 77, 25-41

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., Ginsburg, D. (2009) Thirty years on – a large anti-Flynn effect(II): 13- and 14-year-olds. Piagetian tests of formal operations norms 1976–2006 *British Journal of Psychology*, 79, 409-418

Shayer, M., Kuchemann, 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