

What is the evidence underpinning *Critical Thinking for Achievement*?

The [Critical thinking for achievement](#) programme provides free CPD for primary and secondary teachers of geography and science, to strengthen teachers' subject knowledge and build confidence and capability in curriculum planning and teaching.

The GA/SSAT [Connecting Classrooms \(2015-18\) programme](#) found that critical thinking through a subject lens significantly increased teacher knowledge and understanding, and demonstrated positive impacts on teacher confidence and expertise, pupil engagement, attainment and progress. In particular:

- The plan-do-review structure helped teachers to apply CPD learning in their own classroom, review the impact on students' progress and achievement, share pedagogy and outcomes with school colleagues and fellow-teachers on the course.
- This model proved very effective in engaging teachers in improvement at classroom and phase/department/school level. Peer networks helped secure teacher commitment to change practice 'in the presence of others', a benefit supported by behavioural psychology¹
- As a result of the CPD, the great majority of teachers described:
 - [significant impacts](#) on their pupils' learning; as they applied critical thinking concepts and pedagogy through their subject teaching, they particularly noted improved levels of understanding and achievement.
 - improvements in pupils' engagement, together with confidence and motivation to study. Many noted particular impacts on less successful learners.

The programme design is based on a wide range of evidence for the benefits of critical thinking for pupils, the impact of subject-focused CPD on raising standards, and the benefits of teacher networks:

1. Better use of evidence and enhanced criticality equip pupils with the knowledge and skills they need

- EEF cites extensive evidence² for the impact of metacognitive routines, including independent thinking, criticality and use of evidence. EEF suggests these 'high impact, for very low cost' approaches are applicable to science education and more widely.
- Willingham³ found successful critical thinking programmes embed critical metacognitive strategies into subject curricula and allow time for teacher practice, making critical thinking more likely by placing methodologies within appropriate contexts.
- A group of Cambridge academics⁴ argues that critical thinking delivered through robust pedagogy and applied in subjects has a positive impact on attainment.

¹ [Gollwitzer and Sheeran 2006](#)

² [EEF Metacognition toolkit](#)

³ [Willingham 2007](#)

⁴ [Cambridge Assessment 2010](#)

- UNESCO⁵ identified a 'need to ensure that young people learn foundation skills in a manner that enhances transferable skills such as critical thinking, problem solving ... in order to help them become responsible global citizens'.
- A 2017 Literacy Trust review⁶ found pupils do not have the critical skills they need to identify fake news.
- An OCR survey of 633 academics⁷ showed independent inquiry, research and critical thinking skills within subjects are undergraduate weaknesses, but are essential to the transition to HE.

2. Subject-specific CPD raises teaching quality most effectively:

- A systematic review of international evidence⁸ found professional development focussed on generic pedagogy to be insufficient; effective CPD requires subject knowledge & pedagogy and helps teachers understand how pupils learn in specific subjects.
- A Wellcome Trust review⁹ showed effective CPD 'focussed directly on developing knowledge or practice in a subject area, or focussed on developing an aspect of teaching and learning in ways which are contextualised for specific subjects'; that subject/pedagogic approaches need to be supported by classrooms materials and that effective CPD supports teachers with application.
- A School Workforce Census (SWC) analysis¹⁰ demonstrated that more teachers in schools serving disadvantaged communities lack experience or specialist subject qualifications. Building teacher confidence and capability through subject-specific intervention is particularly important in these schools.
- *Improving Science Teacher Retention*¹¹ used the SWC to find an association between subject-specific CPD and teacher retention.

3. Sustained, collaborative enquiry through teacher networks is impactful, particularly when supported by external expertise

- The DfE (2016) *Standard for teachers' professional development* makes clear that impactful CPD focuses on subjects and pupil outcomes. It uses evidence, professional collaboration, external intervention and sufficient time to effect changes in practice.
- A systematic review of evidence¹² found sustained, collaborative CPD was 'linked with a positive impact upon teachers' repertoire of teaching and learning strategies, their ability to match these to their students' needs, their self-esteem and confidence, and their commitment to continuing learning and development. There is also evidence that such CPD was linked with a positive impact upon student learning processes, motivation and outcomes'.

⁵ [Education for All, 2014](#), p.49

⁶ Literacy Trust [research literature review](#)

⁷ <http://www.ocr.org.uk/images/24556-higher-education-bulletin-summer-2012.pdf>

⁸ [Teacher Development Trust 2015](#), p20

⁹ [Wellcome Trust 2018](#), p5; p25

¹⁰ [Social Market Foundation and Education Datalab](#), 2016

¹¹ [Wellcome Trust 2017](#), p.8.

¹² [Cordingley et al 2003](#) p.8

- Coburn's review of theoretical and empirical literature¹³ found face-to-face teacher networks generate a shared sense of purpose, creating autonomy and a 'safety in numbers' effect in which members give one another permission to do things differently, encouraging experimentation leading to 'deep and consequential change in classroom practice'.
- A rapid evidence review¹⁴ identified a need to enhance subject-specific work across networks to ensure this meets the needs of schools in disadvantaged areas; it found structured peer-to-peer support strengthens CPD impact.
- The ASE **Getting Practical** project trained 200 teachers to lead CPD to colleagues and reached 2000 teachers. The [independent academic evaluation](#) found the teacher-practitioner CPD approach brought substantial change in the use and effectiveness of the investigatory pedagogies promoted.
- *Developing Great Subject Teaching*¹⁵ found that the involvement of external subject specialist strengthens CPD impact.
- *Developing Great Teaching*¹⁶ found external facilitation a common factor in successful outcomes if it provides diverse perspectives and challenges orthodoxies within schools, especially where the expert works as a facilitator alongside local experts.

¹³ [Coburn 2003](#) p.4

¹⁴ [Wellcome Trust 2018](#) p.7; p.6

¹⁵ [Wellcome Trust 2018](#) p.6

¹⁶ [Teacher Development Trust 2015](#) p.24.