Improving Education:
A triumph of hope over experience
Revisited Three Years On

Robert Coe
The Telegraph Festival of Education, Wellington College, 24 June 2016
A triumph of hope over experience

- **Experience**
  - Have educational standards really risen?
  - School improvement: Isn’t it time there was some?
  - Can we identify effective schools and teachers?
  - Is ‘evidence-based’ practice and policy the answer?

- **Hope**
  - So what should we do (that hasn’t failed yet)?
Have educational standards really risen?
Changes in proportion gaining five A*-Cs at GCSE

Percentage of '15 year olds'

Year: 1975 - 2012

Changes in proportion gaining five A*-Cs at GCSE
Performance of England in international surveys

Equivalent change in GCSE grades

25 point rise in PISA = £4,000,000,000,000,000 GDP
1997: Percentages from 1997 include GNVQs in addition to GCSEs.

2004: Reporting changed to GCSE and equivalents to reflect wider group of approved qualifications.

2010: Accredited IGCSEs included for the first time.

2005: Measures based on performance of pupils at the end of key stage 4 rather than at age 15 from 2005 onwards.

2014: There were multiple methodological changes in this year. The Wolf review restricted the qualifications counted, prevented any qualification from counting as larger than one GCSE, and capped the number of non-GCSEs included in performance measures at two per pupil. The early entry policy meant that for exams in English Baccalaureate subjects sat after 29 September 2013 the results from a pupil’s first attempt at the exam was counted, rather than their best.

2015: Early entry policy extended to all subjects.

Source: DfE SFR 01/2016
School improvement: Isn’t it time there was some?
‘Improvement’ often isn’t

- School/college would have improved anyway
  - Volunteers/enthusiasts improve: misattributed to intervention
  - Chance variation (esp. if start low)

- Poor outcome measures
  - Perceptions of those who worked hard at it
  - No robust assessment of pupil learning

- Poor evaluation designs
  - Weak evaluations more likely to show positive results
  - Improved intake mistaken for impact of intervention

- Selective reporting
  - Dredging for anything positive (within a study)
  - Only success is publicised

(Coe, 2009, 2013)
Can we identify effective schools and teachers?
Problems with school effectiveness research

- ‘Effectiveness’ is not effectiveness (Gorard, 2010; Dumay, Coe & Anumendem, 2013)
- Strategies are too vague
- Correlations, not causes (Coe & Fitz-Gibbon, 1998)
  - Can ‘effective’ strategies be implemented?
  - If so, do they lead to improvement?
- ‘Effects’ are tiny anyway (Scheerens, 2000, 2012)
A chain of assumptions:

If …

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Example</th>
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<tbody>
<tr>
<td>1. Value-added models (VAMs) can identify effective schools and teachers</td>
<td>1. This VAM is valid</td>
</tr>
<tr>
<td>2. Characteristics associated with effectiveness are well enough defined to be useful</td>
<td>2. We know what ‘high expectations’ means</td>
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<tr>
<td>3. We know how to develop those characteristics</td>
<td>3. We know how to raise teachers’ expectations</td>
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<tr>
<td>4. Implementing those development programmes leads to improved outcomes</td>
<td>4. Doing this leads to higher attainment</td>
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What makes great teaching?

Review of the underpinning research

Robert Coe, Cesare Aloisi, Steve Higgins and Lee Elliot Major

October 2014
Can value-added models identify effective teachers?

- VAMs are sensitive to
  - Choice of outcome (attainment) measure
  - What type of model is used
  - What factors the models controls for (& how)
  - Impact of previous teachers
  - How students are allocated to teachers
  - Measurement error

- Stability over time is modest
- Convergent validity is modest

Coe et al, 2014, WMGT
Is ‘evidence-based’ practice and policy the answer?
Toolkit of Strategies to Improve Learning

The Sutton Trust-EEF Teaching and Learning Toolkit
http://www.educationendowmentfoundation.org.uk/toolkit/

Feedback
Meta-cognition and self-regulation
Peer tutoring
Early years intervention
One to one tuition
Homework (Secondary)
Clear, simple advice:

- Choose from the top left
- Go back to school and do it

For every complex problem there is an answer that is clear, simple, and wrong

H.L. Mencken
Why not?

- We have been doing some of these things for a long time, but have generally not seen improvement

- Research evidence is problematic
  - Sometimes the existing evidence is thin
  - Research studies may not reflect real life
  - Context and ‘support factors’ may matter

- Implementation is problematic
  - We may think we are doing it, but are we doing it right?
  - We do not know how to get large groups of teachers and schools to implement these interventions in ways that are faithful, effective and sustainable
So what should we do (that hasn’t failed yet)?
Four steps to improvement

- Think hard about learning
- Invest in effective professional development
- Evaluate teaching quality
- Evaluate impact of changes
1. Think hard about learning
Impact vs cost

Does your theory of learning explain why …

These work?

These don’t?

Cost per pupil

Effect Size (months gain)

- £0
- £1000

- Meta-cognitive
- Peer tutoring
- Homework (Secondary)
- Collaborative
- Phonics
- Feedback

- Ability grouping
- Performance pay
- Aspirations
- Teaching assistants

- Smaller classes
- After school

www.educationendowmentfoundation.org.uk/toolkit
Poor Proxies for Learning

- Students are busy: lots of work is done (especially written work)
- Students are engaged, interested, motivated
- Students are getting attention: feedback, explanations
- Classroom is ordered, calm, under control
- Curriculum has been ‘covered’ (i.e., presented to students in some form)
- (At least some) students have supplied correct answers, even if they
  - Have not really understood them
  - Could not reproduce them independently
  - Will have forgotten it by next week (tomorrow?)
  - Already knew how to do this anyway
A simple theory of learning

Learning happens when people have to think hard
2. Invest in effective CPD
How do we get students to learn hard things?

Eg

- Place value
- Persuasive writing
- Music composition
- Balancing chemical equations

- Explain what they should do
- Demonstrate it
- Get them to do it (with gradually reducing support)
- Provide feedback
- Get them to practise until it is secure
- Assess their skill/understanding
How do we get teachers to learn hard things?

Eg
- Using formative assessment
- Assertive discipline
- How to teach algebra

• Explain what they should do
The CPD test
Posted on July 8, 2015 by david.weston

by Robert Coe, Philippa Cordingley, Steve Hart

Our recent review, 'Developing Great Teaching' by colleagues from CTP and ourselves, has been widely reported as saying that traditional 'one size fits all' CPD approaches do not work. These headlines are based on a summary of the key findings in the report, which are quite complex.

Are there some clear recommendations that teachers can look for to make better choices about what kinds of CPD they do?

Yes, and they are in the report. It is not long (11 pages) or technical and every teacher can benefit from reading it.
In your CPD have you ...

1. Tried to learn to do something that is relevant and supported by research evidence? [ ] Yes [ ] No

2. Focused on (and evaluated success against) students’ learning outcomes? [ ] Yes [ ] No

3. Engaged in activity that
   a) Surfaced, challenged and developed your thinking about learning and teaching [ ] Yes [ ] No
   b) Modelled/demonstrated new approaches [ ] Yes [ ] No
   c) Allowed experimentation to adapt/apply approaches to your classroom [ ] Yes [ ] No
   d) Included observation and feedback? [ ] Yes [ ] No
   e) Took place at least fortnightly over two terms? [ ] Yes [ ] No

4. Drawn on explicit support from
   a) External experts [ ] Yes [ ] No
   b) Peer networks [ ] Yes [ ] No
   c) Coaches / mentors [ ] Yes [ ] No
   d) School/college leaders [ ] Yes [ ] No
3. Evaluate teaching quality
Identifying the best teachers

Sources of evidence:

1. Colleagues (peers, SMs) observing lessons
2. Trained outsiders observing lessons
3. Pupils’ test score gains
4. Progress in NC levels (from teacher assessment)
5. Pupils’ ratings of teacher/lesson quality
6. Teacher qualifications
7. Tests of teachers’ content knowledge
8. Parents’ ratings
9. Ofsted ratings
10. Colleagues’ (including senior managers) perceptions
11. Teachers’ self-evaluation
Lesson observation: It’s harder than you think

Classroom observation: it’s harder than you think

Professor Robert Coe

We’ve all done it: observed another teacher’s lesson and made a judgement about how effective the teaching was. Instinctively it feels valid. I am a good teacher; I’ll know a good lesson when I see one. We’ve all experienced it from the other side – being observed – but this time the feeling may be more mixed. Sometimes you get real insight from someone who sees what you don’t, questions what you take for granted and makes you think differently. Sometimes they just tell you what they would have done, or focus on some trivial irrelevance.
How do you know if teaching is working?

1. High-quality assessment
   - Not levels (generalised descriptors/criteria)
   - Convergent with learning goals & other evidence
   - Check for bias & confounds

2. Lesson observation
   - Be very cautious! (no grades or consequences)
   - Based on ‘Great Teaching’ evidence
   - Trust teachers with consistently good outcomes

3. Student feedback
   - Use validated instruments
Using good assessment to monitor teaching

- **Standardised**
  - criteria, exemplars, context, moderation, objective
- **Reliable**
  - accurate, consistent across teachers
- **Aligned**
  - Captures valued learning
4. Evaluate impact of changes
Key elements of good evaluation

- Clear, well defined intervention
- Good assessment of appropriate outcomes
- Well-matched comparison group
What are the issues today?
Progress since 2013

- Standards of attainment probably flat, but at least grade inflation seems to have stopped
- Evaluating school (and teacher) effectiveness is still problematic & higher stakes
- Research evidence is higher profile (eg blogs, Toolkit, researchEd, WMGT, DGT; Research Leads). Maybe better?
  - 12 of 30 books and reports in my ‘Research that is worth reading’ list published since June 2013
- Greater awareness of cognitive psychology
- Ofsted progressed from Inadequate to Requires Improvement
Where next

- An evidence-based, practical theory of pedagogy and instruction
- Practical tools for assessing pedagogy
- Evidence-based curriculum/resources
- Better (and more) CPDL
  - Core teaching skills
  - Assessment ([assessment.academy](https://assessment.academy))
  - Evaluation
- Better assessment tools (item/test banks?)