

Understanding, using and developing evidence about what works where: strategies that work for both pupils and teachers

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Romey Tacon, Catherine Stern and Numicon Mathematics

- National teacher research awards
- 2 teacher researchers with deep concerns about mathematics for vulnerable learners
- Started from Catherine Stern on Number relations
- Developed, trialled and tested resources for “dialling in” number relations visually
- Dramatic improvements proved infectious
- Developed into a mainstream approach for mathematics and boosting vulnerable learners



Romey Tacon and Numicon

- Waves of supported research
- Grew to be a regional movement – great results for struggling learners- became
- Numicon Mathematics taken up by schools and local authorities, eventually published by OUP
- Changed expectations and life chances of pupils re: mathematics here and in several other countries



Alf Coles – developing a sense of the purpose of algebra

- Aim to make algebra meaningful, self sustaining strategy for year 7 students by changing classroom culture and overcoming traditional challenges
- Focus on becoming a mathematician so class researched and agreed that mathematicians are people who;
 - think for themselves,
 - notice and write about what they are doing,
 - ask why things work,
 - are organised; and
 - look for patterns



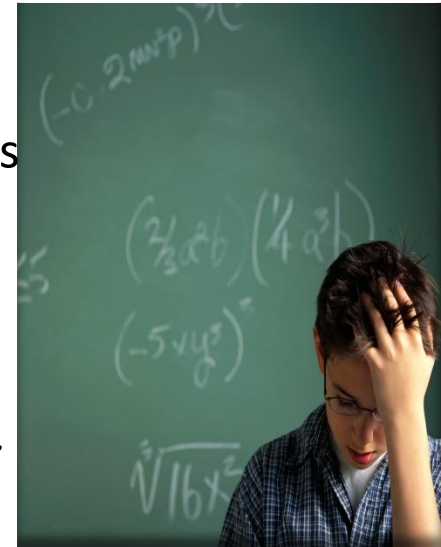
Classroom culture changes via:

Emphasising becoming a mathematician

- Everyone spotting and celebrating mathematical behaviours
- Creating challenging tasks that generate them
- Emphasising students writing down and sharing their mathematical actions and reflections

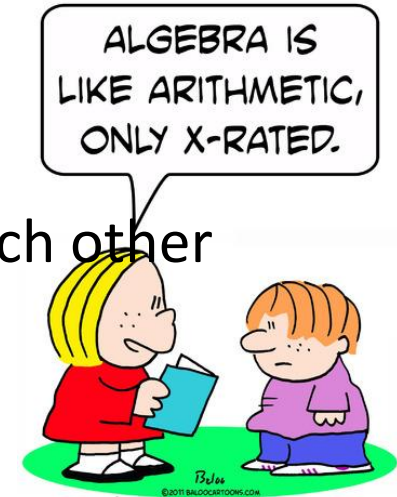
Choosing tasks to reflect values –e.g. *Common Boards* where students

- pinned early work for comment/ checking by others against frameworks on the boards: and
- recorded results for other students to analyse/ classify
- Could pose questions for others to answer
- Could ask for help or chance to help someone else to clarify their own thinking



Results – Students...

- Were confident about depending on and helping each other
- All progressed from no exposure to using symbols, to expressing own ideas in 15 weeks
- Increasingly asked “can we do this for N ?” in problem solving
- Understood algebraic statements in different contexts and could identify what was useful
- Increasingly skilful in algebraic manipulations
- Didn't depend in any way on drill
- Structured their own approach to coursework in similar ways to GCSE students
- Then developed, further tested and refined via NCTEM



A quick buzz

- What strikes you about what made this successful?
- What in your own context would help such work to grow?



The support context?

- A “wicked” issue linked to aspirations for pupils
- A strong evidence base on which to build
- Requirement to build on existing research
- Clarity & rigour re: role of evidence & quality
- Coaching in methods and in writing up research
- An emphasis on needs of other teachers from the start
- Sustained support over time
- Meeting needs of (vulnerable) pupils deepened and drove professional learning from/ through research



The contribution of the reviews

In and with research

PURR Reviews (Bell et al, 2010)

6 key components identified

EPPI 1 (Cordingley et al)	EPPI 2 (Cordingley et al)	EPPI 4 (Cordingley et al)	Timperley et al, 2007	Robinson et al, 2009
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Findings mirrored from previous reviews + 1 extra component

MTL - (Buckler et al, 2009)



The evidence about teacher use of research

The international evidence base:

- Continuing professional development (CPD) – and learning (CPDL) with evidence re impacts EPPI/CUREE
- Best Evidence syntheses
 - Robinson – review of the impact of leadership
 - Timperley – re CPD
- Read across Leaders’ and teachers’ learning –Pearson
- Evidence re professional work based learning for MTL



The Eight Key Characteristics

- Use of specialist expertise especially via research evidence
- Peer support and professional dialogue rooted in evidence from experiments with new approaches and
- Learning to learn from looking – focused enquiry/ observation skills
- Using aspirations for pupils as a starting point
- Developing theory and practice side by side
- The development and use of professional learning/enquiry tools
- Pro-activity – professional learning done *by* teachers (within a table d'hôte menu)
- Leadership recognition and modeling



The Engagement Spectrum



Engagement
with Research

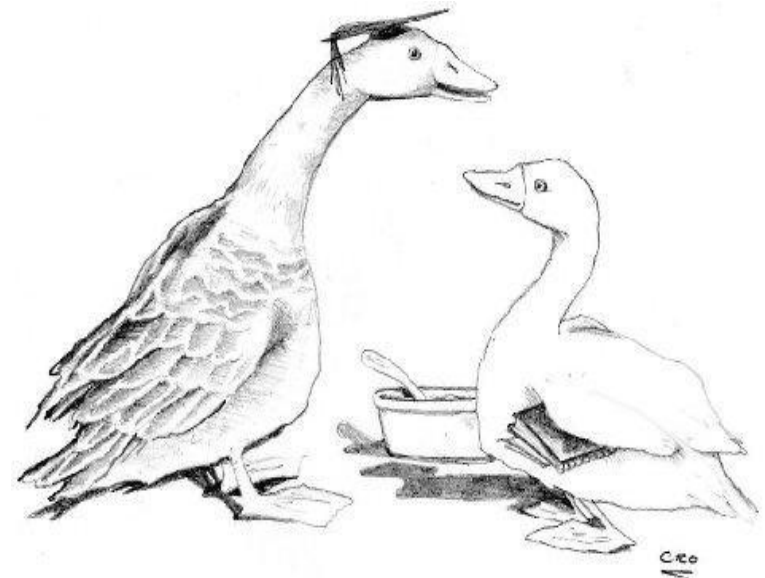


Engagement in
Research



Sauce for the Goose

- Too much focus on *teaching* teachers instead of focussing on their learning about their pupils' learning
- Learning for staff and pupils means recognising, reviewing, challenging and building on what people believe, understand, and can do already
- It means
 - “learning how to learn” skills for teachers e.g. how to make best use of coaching sessions <http://www.curee.co.uk/products-we-offer/effective-mentoring-and-coaching-suite/samples/taking-hold>
 - And helping teachers wrap such skills around the day job – eg via research <http://www.curee.org.uk/content/sauce-goose-learning-entitlements-work-teachers-well-their-pupils>



“I’ll have what he’s having!”



Another buzz

- What of these characteristics exists in your environment?
- What might *you* add to your own opportunities to engage with evidence?





What does a research and evidence-rich school Professional learning environment look like?



Testing the evidence base -Skein

- Pilot in 4 schools, reliable e.g. Inspection predictor
- Completed in 27 schools Nursery, primary, secondary and 3 colleges
- First meta analysis presented at BERA for 5 domains
 - Leadership of CPDL; Use of specialist expertise ;
Needs assessment; Evidence for learning;
Collaboration
- And at four levels:
 - Developing; enhancing, embedding, transforming

<http://www.skein.org.uk/>



CUREE translated international evidence into a school improvement/ CPD evaluation tool that:

- ✈ Focuses on what benefits pupils and staff
- ✈ Evidences efficiency and effectiveness in 5 key areas:
 - ✈ **collaboration** as a professional learning strategy
 - ✈ **use of expertise** to ensure depth and accuracy
 - ✈ **use of evidence** to link staff and pupil learning
 - ✈ **needs analysis** for cumulative, personalised learning
 - ✈ **leadership** of professional learning
- ✈ Identifies effective and efficient next steps and builds in-school capacity to support research based practice and school improvement



A choice

- Now we could finish with a case study or
- A great story metaphor
- Votes?



Kenton an eg of a developing research based school culture

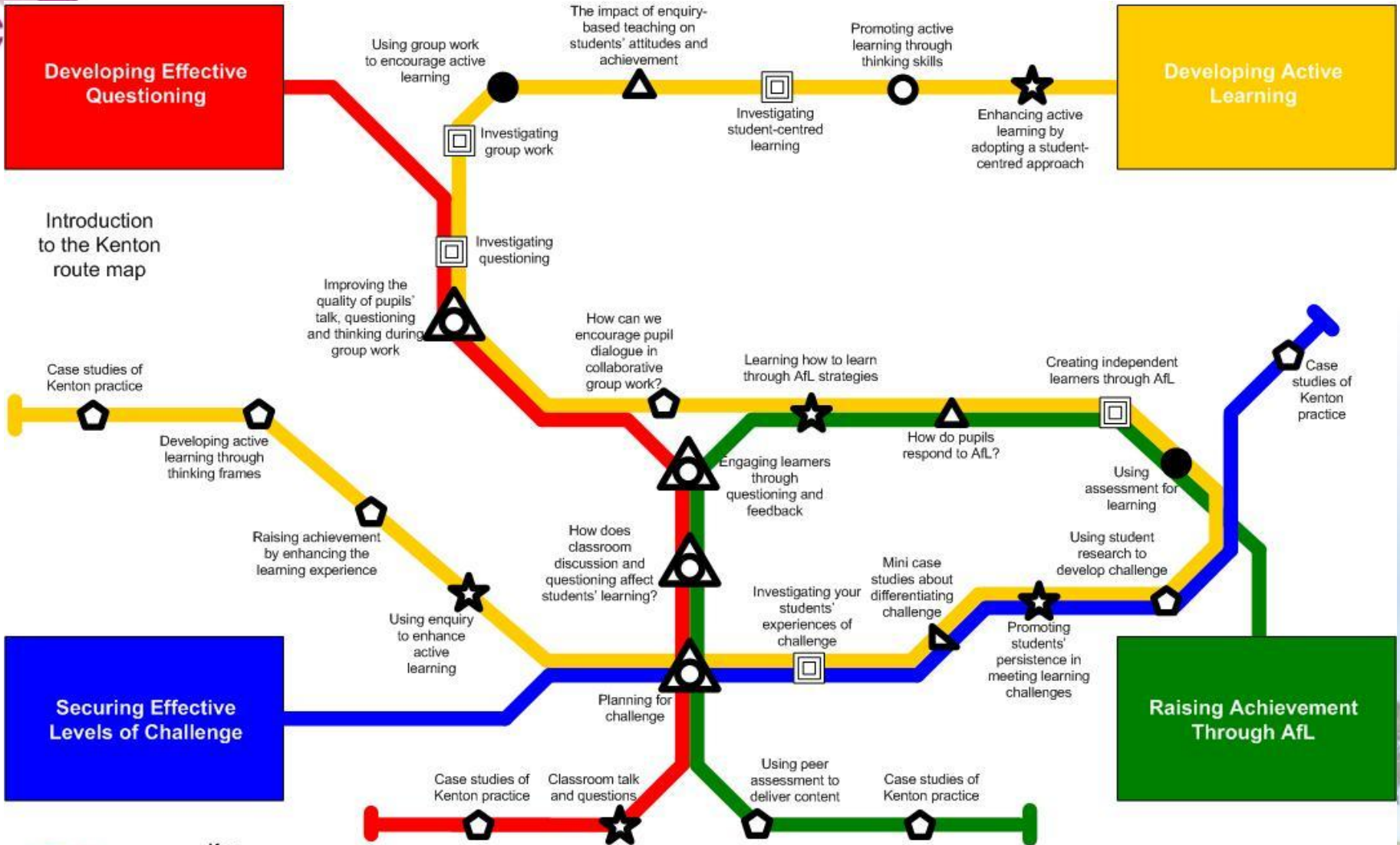
- Deputy head and CPDL leader designs and leads a Professional Learning Programme (PLP) for *all Staff*
- PLP via 2.30- 4.30 sessions each Wednesday, 3 full day sessions, multiple enquiry/ R&D groups and sponsorships of degree and M level study
- PLP offers mix of CPDL approaches e.g. interactive whole school sessions, and Research and development groups



Kenton school

- All PLP inc research underpinned by co-coaching for *all* staff
 - supported by trained co-coaching champions and practical tools and resources to secure quality.
 - and research route maps providing a guided pathway through research summaries, micro enquiry tools, etc
- Staff choose activities, from varied programme, in context of their specific goals/targets
- Specialist expertise internal & external valued –but vetted prior to use
- Staff views researched too via surveys/ focus groups etc





Key



Tasters - micro enquiry tools to try with your students - choose which of the three levels you want to work with



Practitioner friendly summary



Teacher case study



Mini case studies



Summary of research plus related case studies



Videos



Short and engaging PowerPoint summary (Bites)

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 - and research route maps providing a guided pathway through research summaries, micro enquiry tools, etc
- Staff choose activities, from varied programme, in context of their specific goals/targets
- Specialist expertise internal & external valued –but vetted prior to use
- Staff consulted extensively



Making connections

- Identify a specific group of pupils in your school or the schools you support who stand to gain from this approach as a test case?
- Which examples of evidence might you explore further from this presentation or your own context?
- Identify one question or action point that will help you use this session to help them
- You can email me with questions and we will try to answer them!



Merlin, Arthur and research





The Book of Merlin T H White

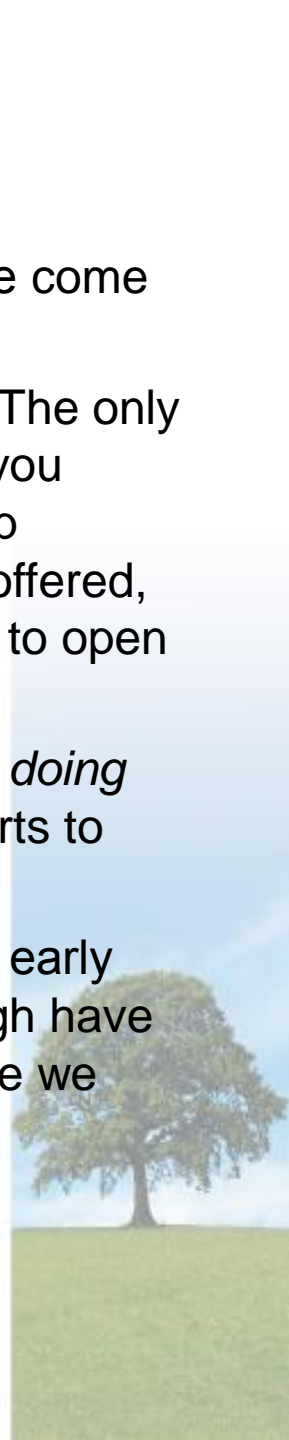
Merlin” said the King, “tell me the reason for your visit. Talk. Say you have come to save us from this war.”

“No” replied his former tutor “it is hopeless doing things for other people. The only thing worth doing for the race is to increase the stock of ideas. Then, if you make available a larger and deeper stock, the people are at liberty to help themselves from out of it . By this process the means of improvement is offered, to be accepted or rejected according to their need. Such is our business, to open up new ideas (and practices).”

“You did not tell me this before.” Replied Arthur “You have egged me into *doing* things all my life, the chivalry, the Round Table. What were these but efforts to save people and to improve how things are done?

“They were ideas” said Merlin firmly, “rudimentary ideas. All thought in its early stages begins as action. The actions which you have been wading through have been ideas, clumsy ones of course, but they had to be established before we could begin to think in earnest. You have been teaching man to think.”

“So my round table was not a failure Merlin?” “Certainly not, It was an experiment”.





Let us know if you would like to find out more

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