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# Metacognition; supporting teachers & learners as thinkers

Professor Rachel Lofthouse  
Director of CollectivED  
Leeds Beckett University

Friday 5<sup>th</sup> April 2019



Thinking is the basis for learning, and learning allows for better thinking.

This reciprocal relationship is lived out in how we teach, and how our learners engage and how we sustain progress.

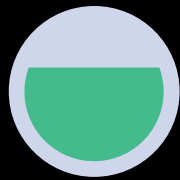


# Making sense of metacognition and its impact on learning



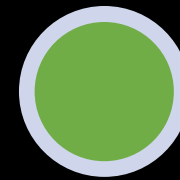
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Questions  
and  
reflections



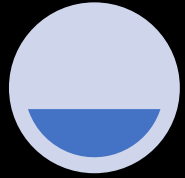
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Powerful  
pedagogic  
strategies

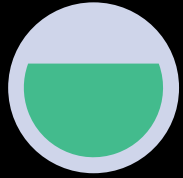


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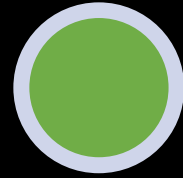
Swaledale  
in focus



1



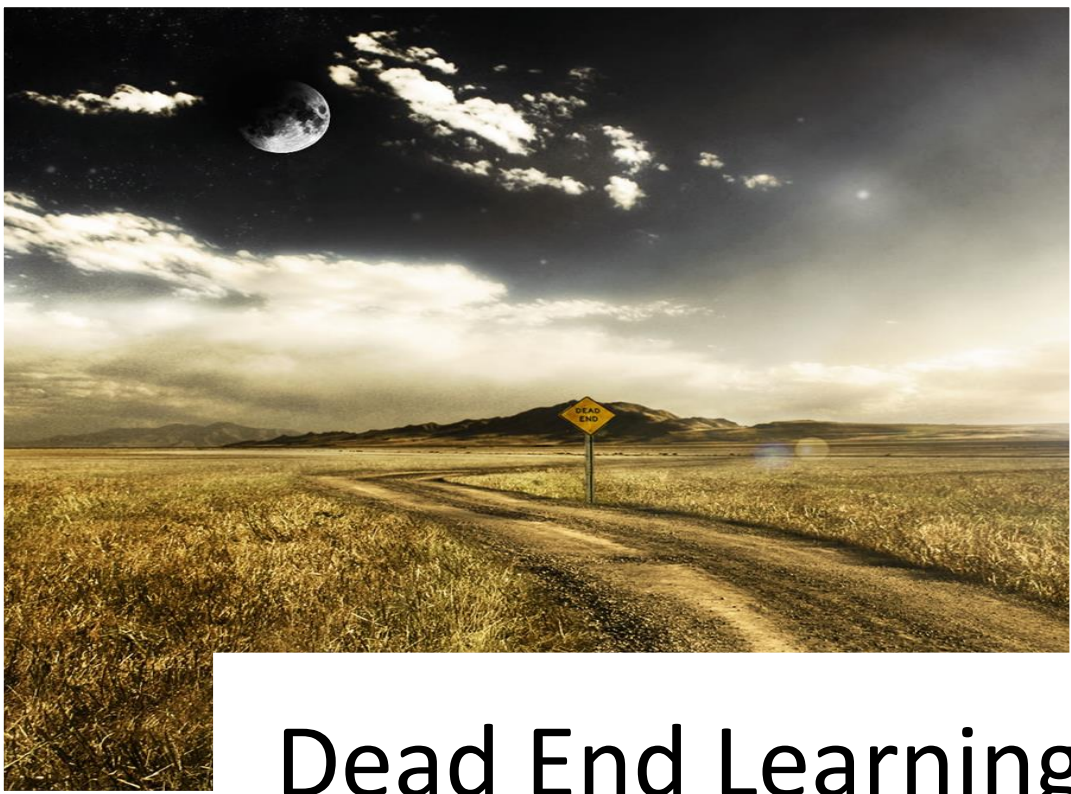
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3

Questions  
and  
reflections

# Learning: What do we fear?



Dead End Learning

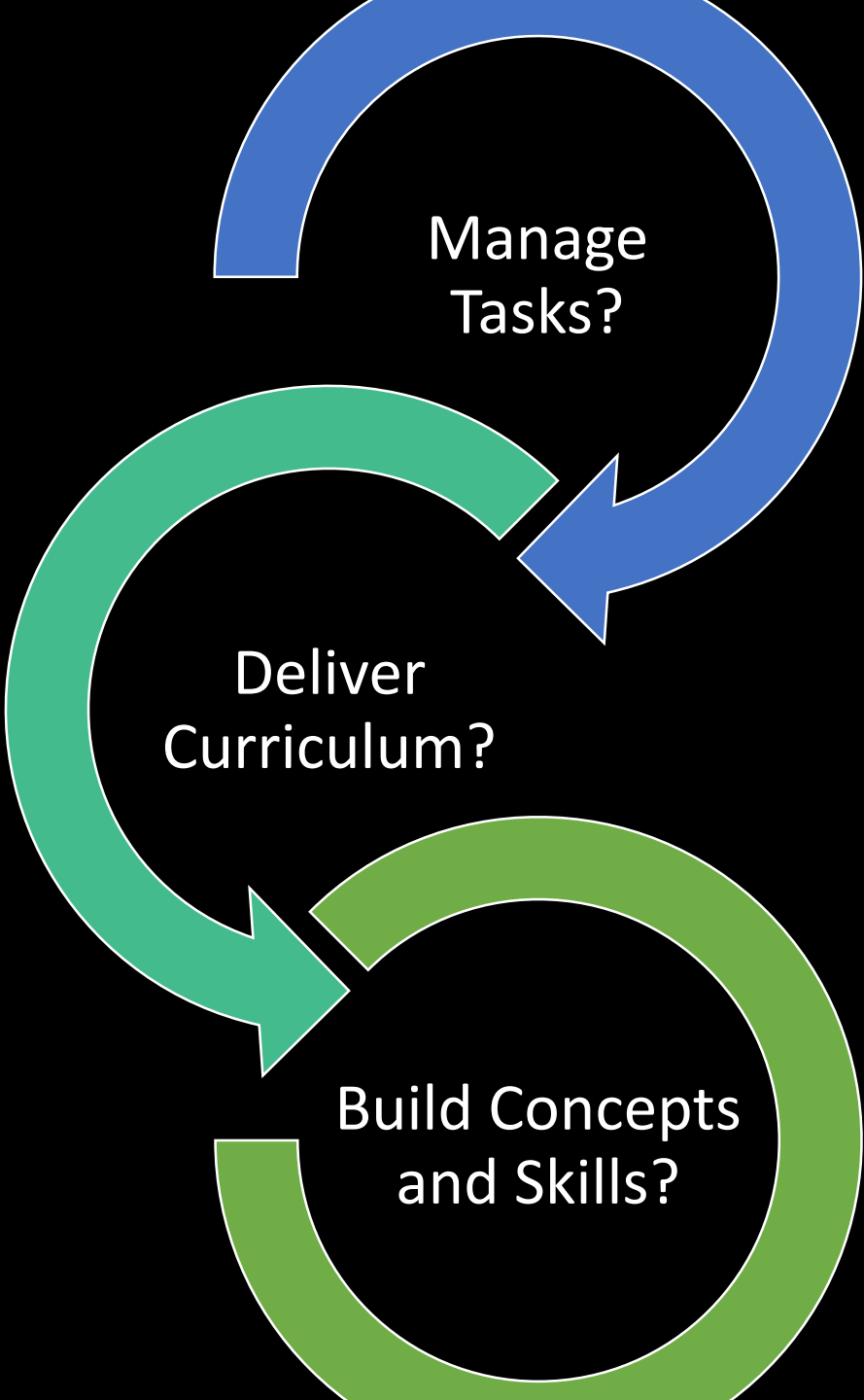


Free Range Learning

# Teachers: What do we do?



Samantha Twisleton





# Education: What is it for?

An education just focusing on qualification and socialisation is just training; treating the child as an object

Qualification; gaining valuable knowledge and skills (not just paper qualifications)

Socialisation; initiation into the existing 'orders'

Subjectification; formation of 'self' as the subject of education

Education has to have the 'person' (child) as the subject, so that they become the subject of action and responsibility; and can achieve independence / autonomy



Gert Biesta



# Metacognition: a moment to reflect

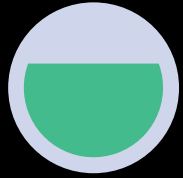
Talk in a pair;  
reflect on the  
conference so  
far

What questions  
emerge  
regarding  
conference  
themes?

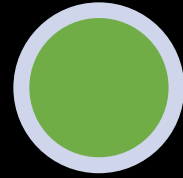
Share with  
others and  
select one  
question per  
table to share



1



2



3

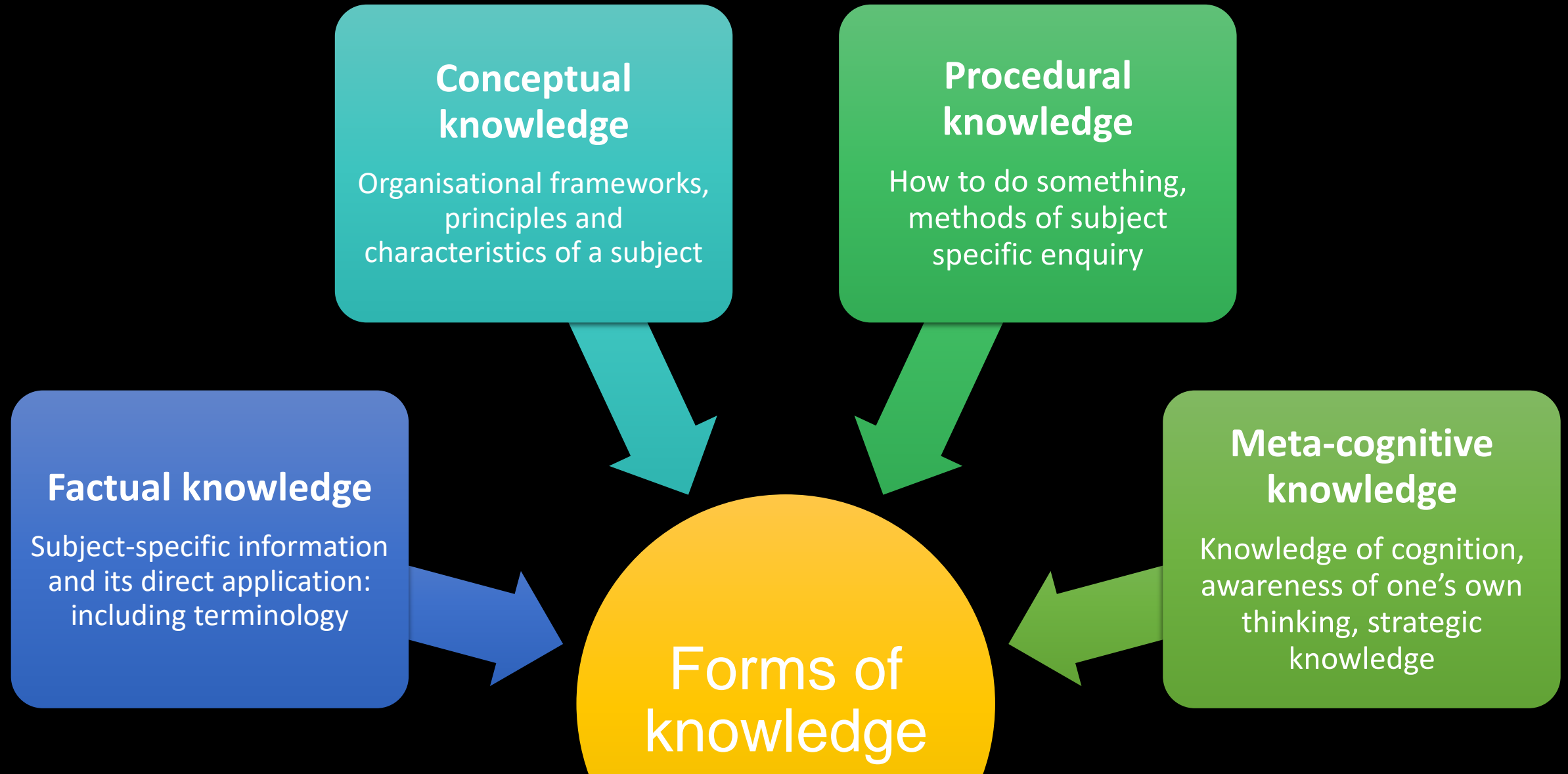
Powerful  
pedagogic  
strategies

# Reframing learners as thinkers

- What kind of thinking matters?
- What kind of thinkers do we want our learners to be and to become?



# The nature of knowledge and ways of knowing: based on the revised Bloom's taxonomy



# Big Picture: Teaching for Thinking

- Teaching thinking skills involves both the teacher and pupils paying attention to the **cognitive processes** that facilitate learning.
- This demands pupils' **active participation** in learning activities and explicit talk about the learning process.
- Typically teaching thinking lessons involve group work and debriefing with some focus on **metacognition**.
- Thinking skills teaching can either be infused within the subject curriculum or be taught as an independent dimension – evidence for **infusion** having greatest impact.

# Metacognition (EEF)

## What is it?

- Meta-cognition (sometimes known as 'learning to learn') and self-regulation approaches aim to help learners think about their own learning more explicitly.
- This is usually by teaching pupils specific strategies to set goals, and monitor and evaluate their own academic development. Self-regulation means managing one's own motivation towards learning. The intention is often to give pupils a repertoire of strategies to choose from during learning activities.

## How effective is it?

- Meta-cognition and self-regulation approaches have consistently high levels of impact with pupils making an average of eight months' additional progress. The evidence indicates that teaching these strategies can be particularly effective for low achieving and older pupils.
- These strategies are usually more effective when taught in collaborative groups so learners can support each other and make their thinking explicit through discussion.
- There is no simple strategy or trick for this. "Scaffolding" provides a useful metaphor: a teacher would provide support (scaffolding) when first introducing a pupil to a concept, then remove the scaffolding to ensure that the pupil continues to manage their learning autonomously.



1

Teachers should acquire the professional understanding and skills to develop their pupils' metacognitive knowledge



- Self-regulated learners are aware of their strengths and weaknesses, and can motivate themselves to engage in, and improve, their learning.
- Developing pupils' metacognitive knowledge of how they learn—their knowledge of **themselves as a learner**, of strategies, and of **tasks**—is an effective way of improving pupil outcomes.
- Teachers should support pupils to **plan, monitor, and evaluate** their learning.

2

Explicitly teach pupils metacognitive strategies, including how to plan, monitor, and evaluate their learning knowledge



- Explicit instruction in cognitive and metacognitive strategies can improve pupils' learning.
- While concepts like 'plan, monitor, evaluate' can be introduced generically, the strategies are mostly applied in relation to specific content and tasks, and are therefore best taught this way.
- A series of steps—beginning with **activating prior knowledge** and leading to **independent practice** before ending in **structured reflection**—can be applied to different subjects, ages and contents.

3

Model your own thinking to help pupils develop their metacognitive and cognitive skills



- Modelling by the teacher is a cornerstone of effective teaching, revealing the thought processes of an expert learner helps to develop pupils' metacognitive skills.
- Teachers should verbalise their metacognitive thinking (*'What do I know about problems like this? What ways of solving them have I used before?'*) as they approach and work through a task.
- Scaffolded tasks, like worked examples, allow pupils to develop their metacognitive and cognitive skills without placing too many demands on their mental resources.

4

Set an appropriate level of challenge to develop pupils' self-regulation and metacognition



- Challenge is crucial to allow pupils to develop and progress their knowledge of tasks, strategies, and of themselves as learners.
- However, challenge needs to be at an appropriate level.
- Pupils must have the motivation to accept the challenge.
- Tasks should not overload pupils' cognitive processes, particularly when they are expected to apply new strategies.

5

Promote and develop metacognitive talk in the classroom



- As well as explicit instruction and modelling, classroom dialogue can be used to develop metacognitive skills.
- Pupil-to-pupil and pupil-teacher talk can help to build knowledge and understanding of cognitive and metacognitive strategies.
- However, dialogue needs to be purposeful, with teachers guiding and supporting the conversation to ensure it is challenging and builds on prior subject knowledge.

6

Explicitly teach pupils how to organise and effectively manage their learning independently



- Teachers should explicitly support pupils to develop independent learning skills.
- Carefully designed **guided practice**, with support gradually withdrawn as the pupil becomes proficient, can allow pupils to develop skills and strategies before applying them in **independent practice**.
- Pupils will need timely, effective feedback and strategies to be able to judge accurately how effectively they are learning.
- Teachers should also support pupils' motivation to undertake the learning tasks.

7

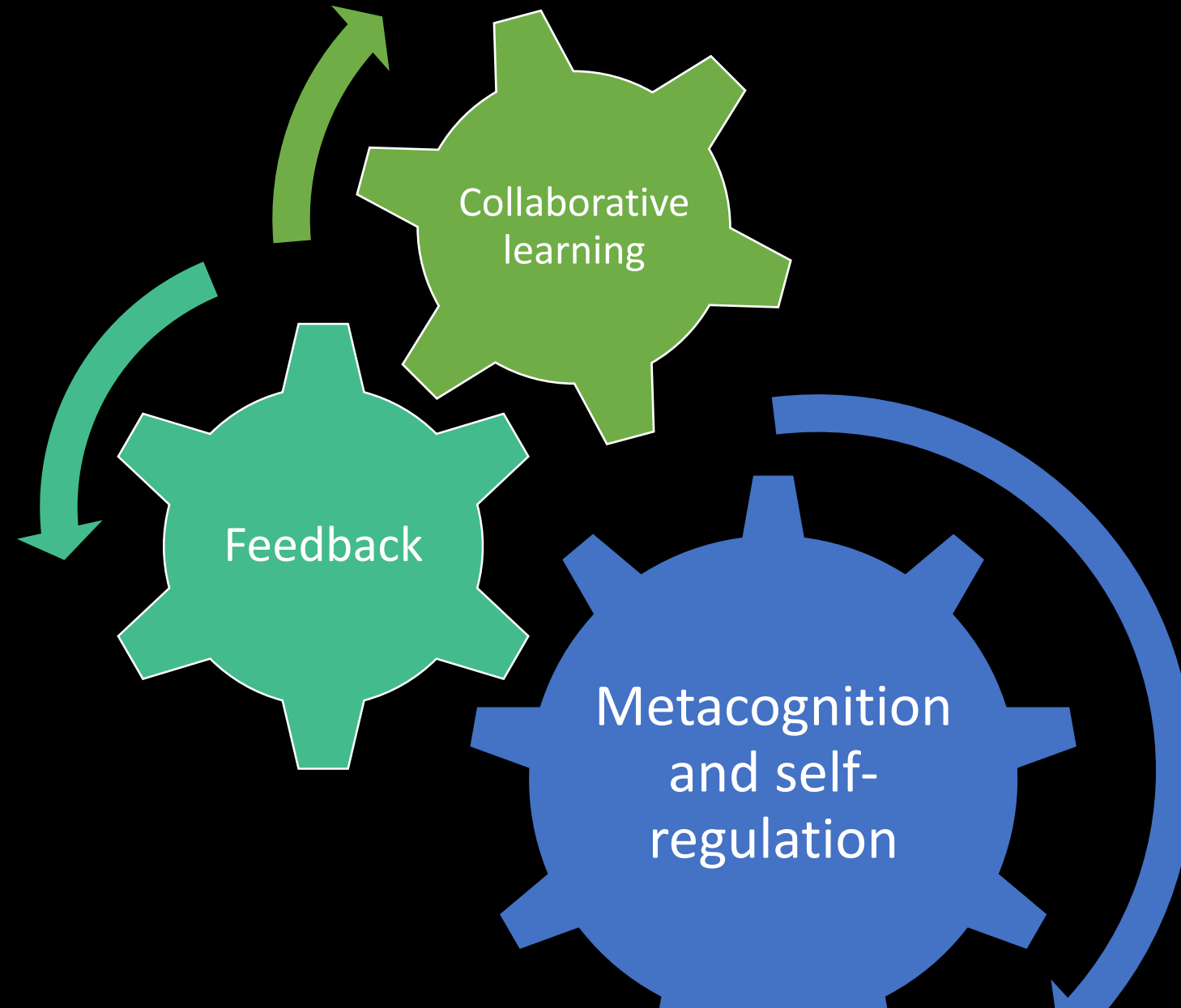
Schools should support teachers to develop knowledge of these approaches and expect them to be applied appropriately



- Develop teachers' knowledge and understanding through high quality professional development and resources.
- Senior leaders should provide teachers with time and support to make sure approaches are implemented consistently.
- Teachers can use tools such as 'traces' and observation to assess pupils' use of self-regulated learning skills.
- Metacognition shouldn't be an 'extra' task for teachers to do but should be built into their teaching activities.



# The Big Picture: what makes the difference?



David Leat



# Powerful Pedagogic Strategies



Steve Higgins

represent manageable unit of change for teachers aiming to innovate;

flexible across subjects, ages and curriculum contexts;

have no single correct answer so they encourage engagement with ideas;

extend our understanding of subject knowledge from something to be mastered to become the stimulus to reasoning;

encourage exploratory talk between pupils and provide rich learning experience suitable for metacognitive plenary (debrief).

## Our History

Let's Think began life as a research project called Cognitive Acceleration at King's College London, led by Philip Adey, Michael Shayer and Carolyn Yates. This project built on the work of Feuerstein who believed that any pupil can make progress if taught in the right way. The CASE project for KS3 pupils was shown to have an impact not just on pupils' attainment in science, but also in English and maths. It was then developed for maths as CAME (Cognitive Acceleration through Maths Education). Currently under development at King's College is the newest of the Cognitive Acceleration programmes: Let's Think English.

Numerous research papers published over a thirty-year period have shown the effects of teaching Let's Think on pupils' learning are:

- permanent, i.e. do not fade with time
- across subjects. i.e. not confined to the school subject they started with
- statistically significant compared with similar classes without Let's Think lessons
- applicable to 6/7 year olds as well as 11/12 year olds
- proven to have a significant effect on pupils' capabilities with even a moderate use
- replicable elsewhere, eg in Finland

Few, if any other approach has produced such long-term effects across the board.

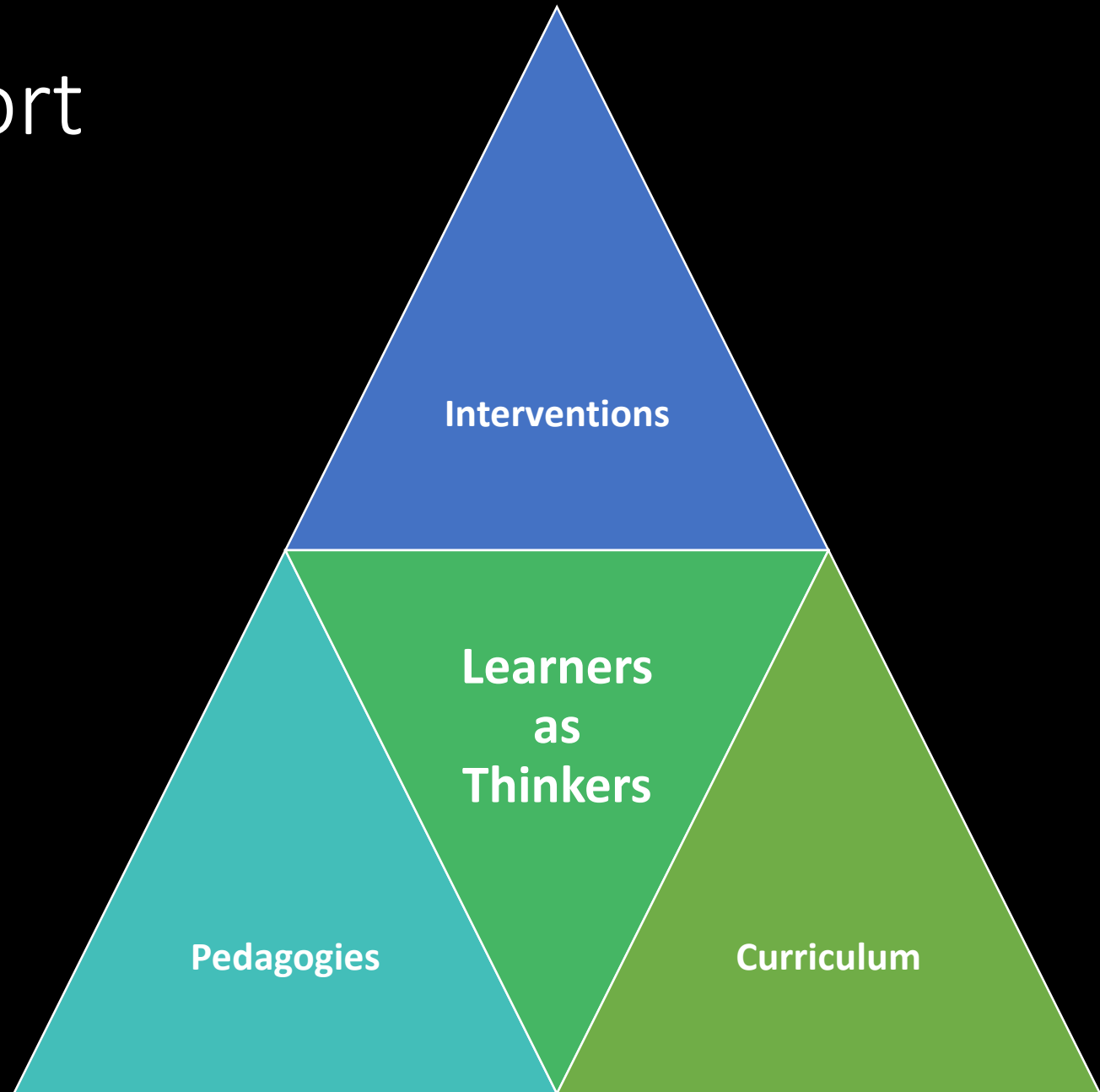
Ofsted have identified Let's Think as an effective approach to maths teaching.

<https://www.letsthink.org.uk/>

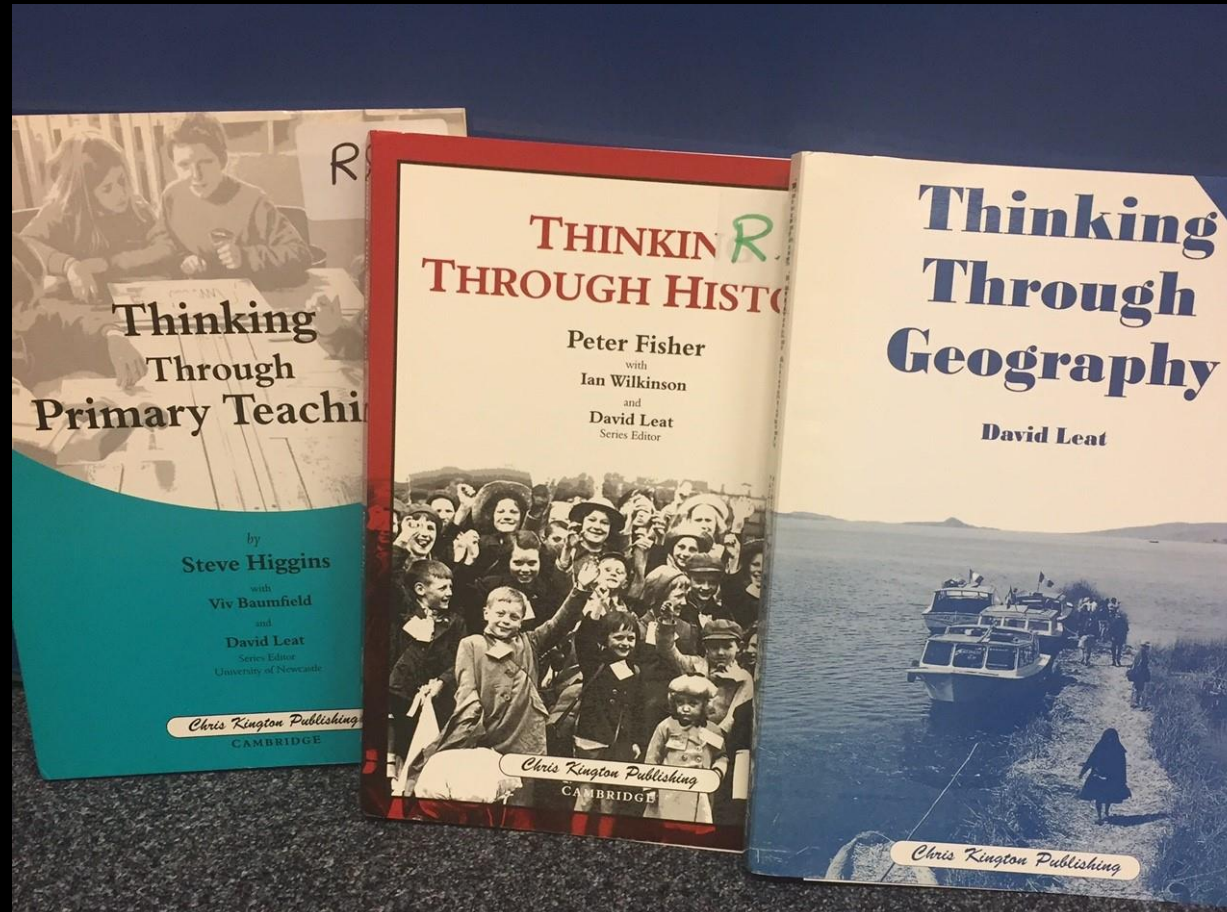


Alex Black  
@alexbclearning Follows you  
Teacher of Science and Theory of Knowledge. Educational consultant.  
Member of Let's Think Forum Council.

# Beyond the card sort



# Odd One Out, Living Graphs and Mysteries

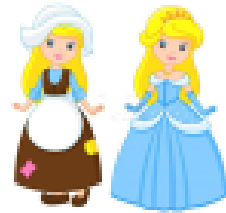


# 'Odd One Out' and Beyond

Fairy tale Who's who?

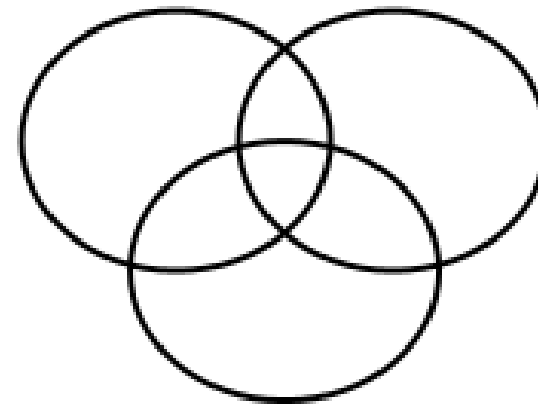
Which character is **most likely to** ...

1. have golden blonde hair
2. go to bed early
3. meet magical characters
4. marry a prince
5. feel bored
6. want a new experience
7. get on with her family
8. look after other people
9. talk to a frog
10. be in trouble with other people

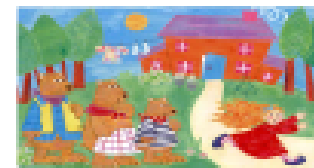
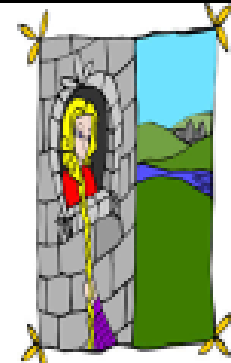


Cinderella

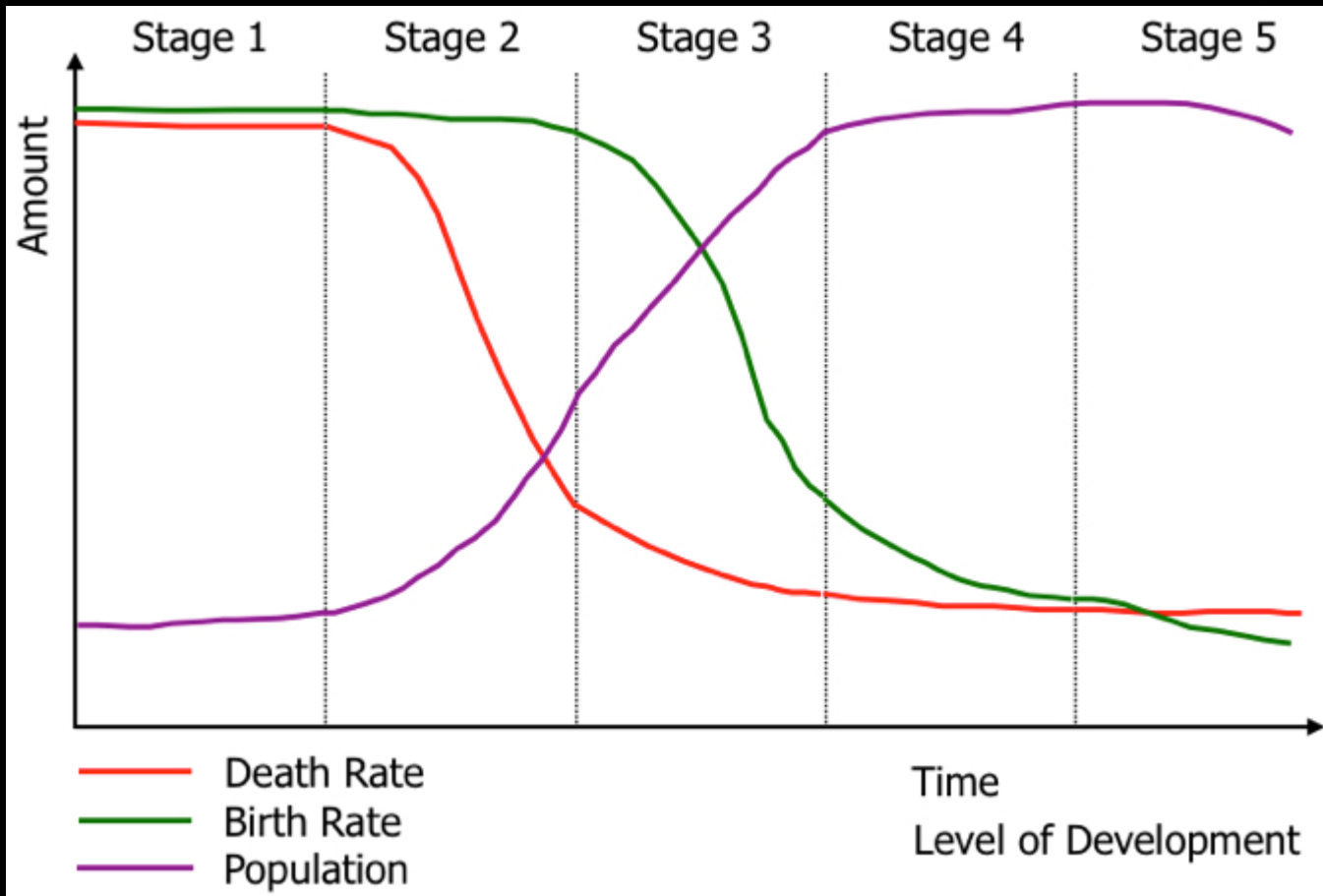
Rapunzel



Goldilocks



# Bringing data to life: 'Living Graph'



Billy white loses his job as a gravedigger.

There are more golden weddings.

Parents start to think more about family planning

A lot more houses are being built.

Grandparents are rare

The public health inspector smiles as the building of new sewers is finished



# Challenging thinking through 'Mysteries'



Choose an interesting scenario to write a mystery about - pose an interesting question

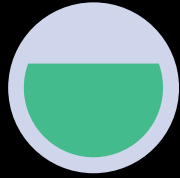
16-26 statements (depending on age / ability )

Think about statements which might provide

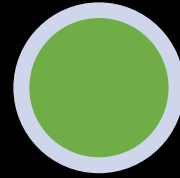
- Story-line with events
- Characters
- Cause and effect
- Degrees of relevancy (and irrelevancy)
- Facts and opinions
- Big picture and little detail



1



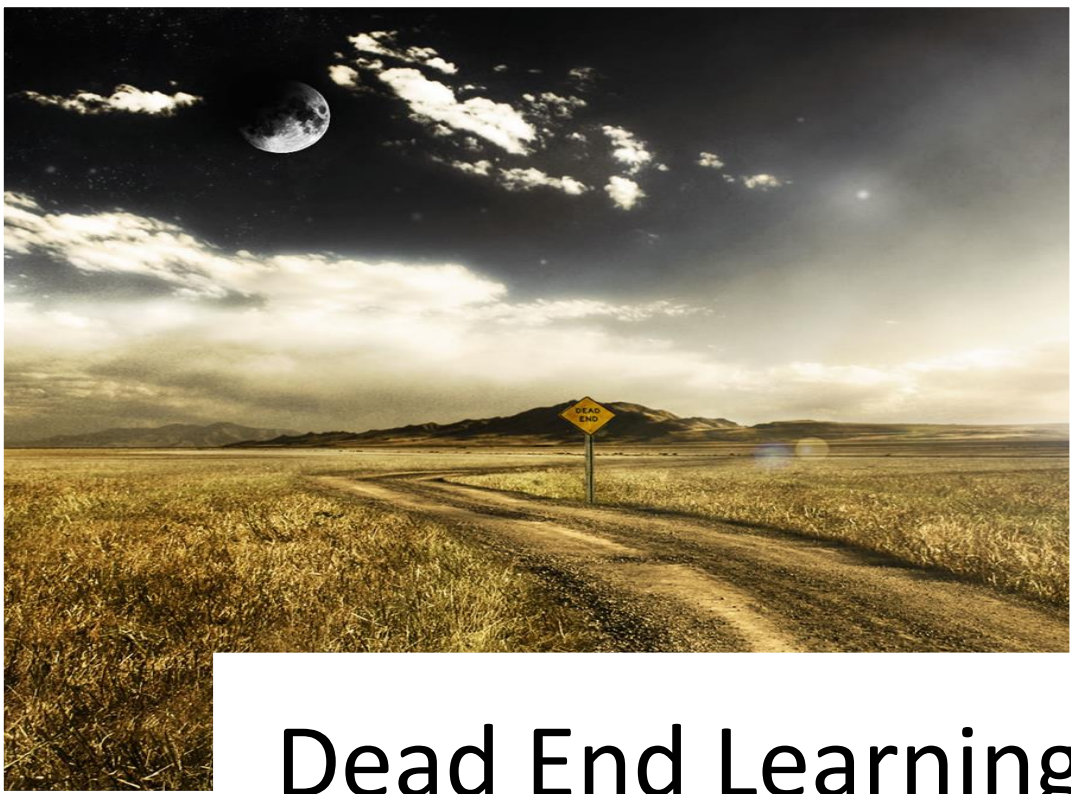
2



3

Swaledale  
in focus

# Metacognition in action: What do we fear for our teachers?



Dead End Learning



Free Range Learning

# Contextualised Specialist Coaching:

Swaledale Metacognition in Service Schools SSIF Evaluation



‘Teacher learning takes place at the connection between theory, practice and person’ Korthagen (2017)

Coaching approach with teachers

modelling

joint planning

co-teaching

debriefing



## Coaching offered reciprocal and cumulative benefits

“Usually for the training sessions, you get half a day after the Christmas or summer holiday, whereas with this you get continued support. Other training sessions are an hour here and an hour there and there is no one afterwards to help you or check on you or to discuss it with.

The difference between this project and anything else we’ve done in the past, is the support.” *Lead teacher*

The Lead Practitioners / coaches have all grown in their teaching and coaching skills as a result of the project. The LPs have all gained considerable insight into school improvement work and have the potential to use this effectively in future roles. They reported improved coaching and communication skills as well as the ability to negotiate difficult situations and relationships.

*Swaledale SSIF evaluation report, Leeds Beckett University*



# Teacher learning through collaboration



## Stage 1: the personal.

- Through their work with LPs, teachers focused on their own understanding rooted in developing classroom practice and analysing data which emerged. With the help of the LPs, they arrived at generalizations about metacognition and self-regulation and perceived its relevance to their teaching situations.

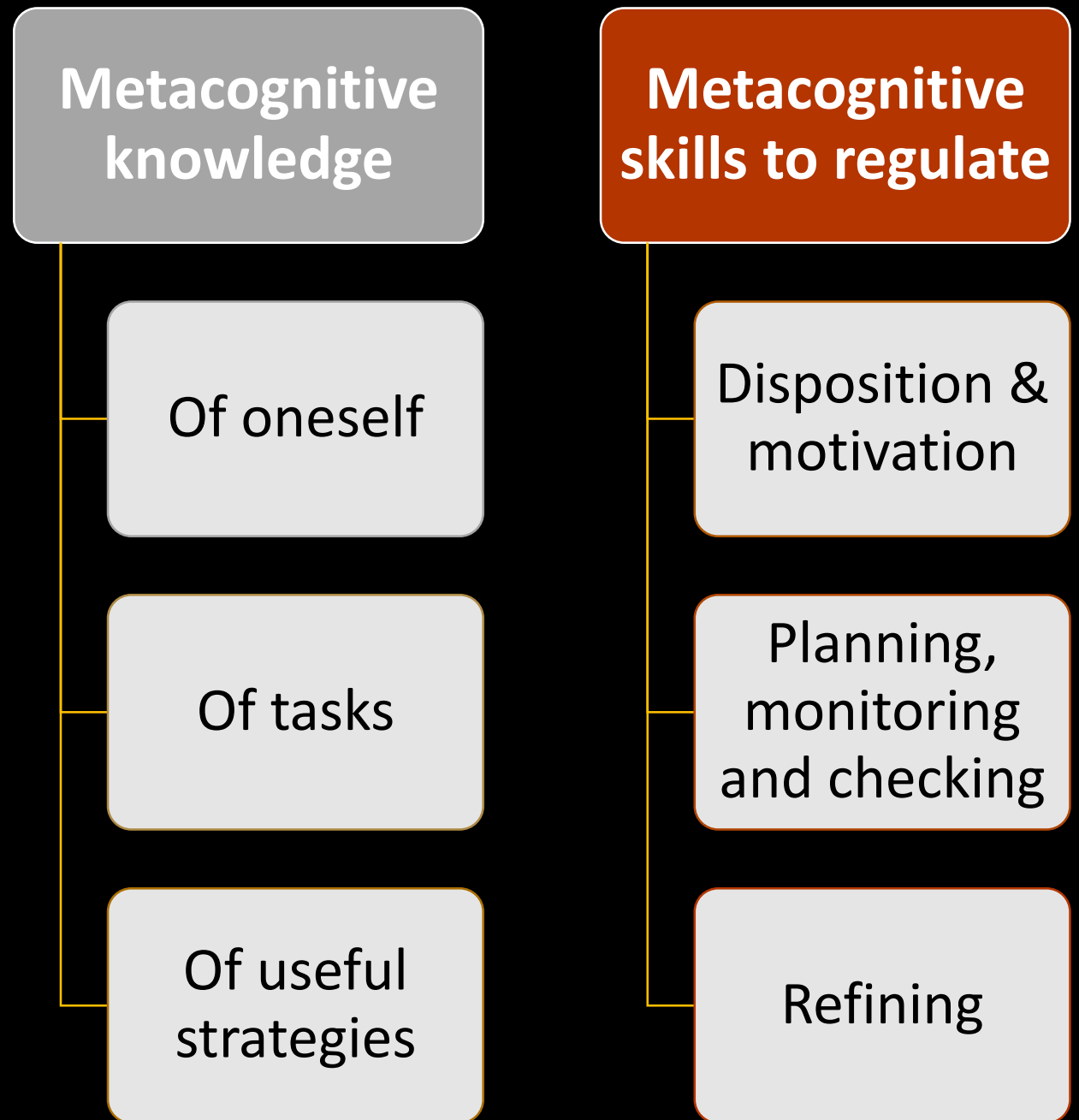
## Stage 2: the collegial.

- The network meetings and observations became significant as a community in which teaching and learning approaches was shared, designed and reviewed, in an environment characterised by professional intimacy.

## Stage 3: the collective.

- The collegial group has developed sufficient confidence to work with others (in their own schools and beyond) allowing the approaches to be more commonly recognised, and collectively explored across a wider range of settings. In this SSIF project the LPs have certainly reached this stage, but also many of the teachers as evidenced (for example) by their applications to become Specialist Leaders in Education through the Teaching School Alliance.

Teachers  
become more  
metacognitive  
too







Martin Luther King Jr

The function of education is to teach one to think intensively and to think critically.

Education which stops with efficiency may prove the greatest menace to society.

The Purpose Of Education

Morehouse College Student Paper, The Maroon Tiger, in 1947