Thinking Matters

KEYNOTE by Alistair McConville

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Supporting Young People in Learning how to Learn

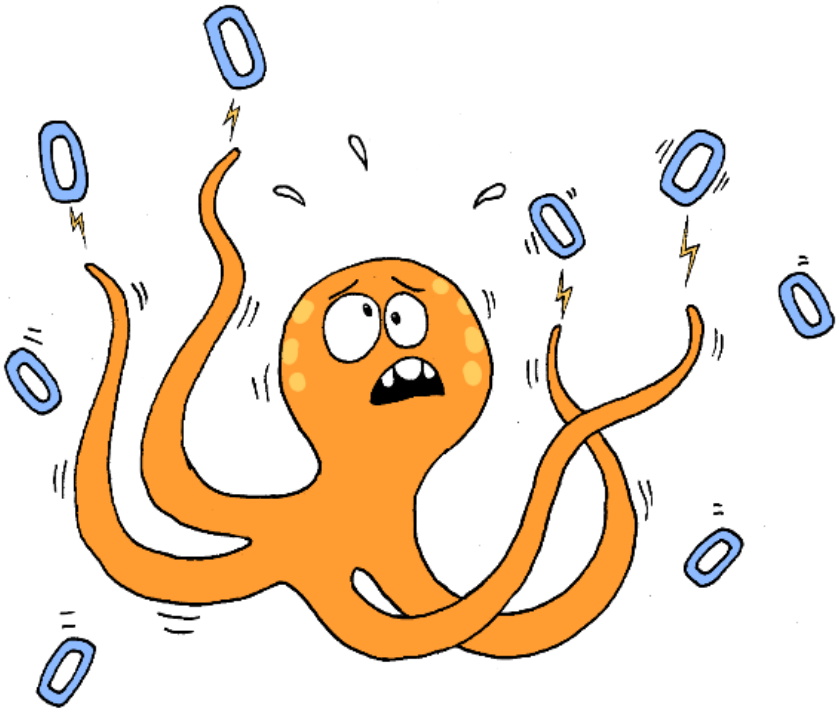
A Review by Paul Tyack

If, like me, you believe that education is as much about socio-emotional development and 'taking action' as about knowledge retention, I would recommend you read the piece on Cognitive Load Theory that Alistair McConville recently wrote for the TES. With this in mind, I was pleased to see Alistair's name as another high-quality keynote speaker at the International Thinking Schools Conference.

Alistair introduced his work with Barbara Oakley and Terrence Sejnowski on the 'Learning how to Learn' MOOCs, which have been very successful in the US and the UK. The MOOC for children is aimed at 9-13 year olds and Alistair worked in particular on the metaphors that the course uses to present principles and bring them to life for learners. Much of this revolves around zombies, it appears.

Examples included:

- **Working Memory** is presented as an 'Attentional Octopus' who can 'grab' information as it comes in but can only hold a certain number of pieces.



- **Transfer from Working Memory to Long Term Memory** is shown as collecting things (information) in our backpack (WM) and storing it in your locker (LTM).

- How to tackle **Cognitive Load** is explained by jigsaw being 'chunked' rather than being tackled in individual pieces.

- **Connecting / chunking knowledge** is shown as chains being linked (aware of political connotations in the US).

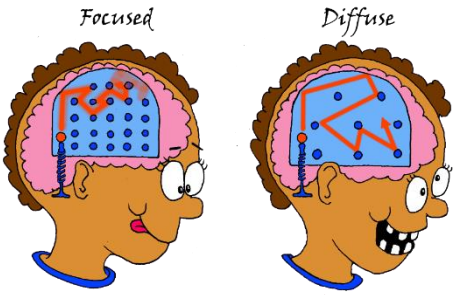
- **Spaced repetition and interleaving** is shown as building a wall yet the importance of leaving the mortar that holds the bricks together time to dry before working on it again.

- **Sleep** can be seen as a 'download' to Long term memory as it empties out the hippocampus ready for new learning to come in and neurotoxins are washed away. If we don't get enough sleep, the 'night sweeper' comes in and sweeps the synapses which haven't had enough consolidation.

Barbara Oakley suggests we all have two Brain Operating Modes. We can't really be in both simultaneously and are always in one or the other.

Focused: A pinball game where the rubber bumpers are close together where the ball (thought) rattles around quite quickly. There are holes the ball can fall through and land in diffuse mode.

Diffuse: A pinball game where the rubber bumpers are further apart, meaning the ball moves more slowly over a greater distance, meaning the thought moves through the whole brain, enabling creative thinking and transfer.



Alistair went on to discuss the science of procrastination. Pain receptors light up in the brain when you think about an undesirable task. Once you start doing a task that you're not keen on, the pain receptors die down quite quickly. This all adds up to *'just get on with it'*. The Pomodoro effect helps us with this. Named after a kitchen timer in the shape of a tomato, this tells us we can be more productive if we set the timer for 25 minutes and get on with the task with no distractions (focused mode). Then we allow ourselves a break of roughly 10 minutes in diffuse mode to allow whole-brain connections to be made whilst we must do something else.

As he explained that he had used a lot of these 'zany metaphor' principles to learn and pass GCSE Chemistry, it occurred to me that a lot of what he had presented did not, in my eyes, match with the progressive approach he explained he and Beadles school take. This did not sound like the Alistair McConville I had read challenging the current fixation with Cognitive Load Theory so eloquently in the TES.

Just as I was preparing for life with this confusion and disappointment, Alistair offered up a thought-provoking and reflective post-script. The fact that the book was well-received and praised by traditionalists such as Daisy Christodoulou alerted Alistair to the fact that he had written a book about how to pass tests/exams in a formulaic way. This could then be interpreted as being in support of a very narrow, information, repetition and script led education. This knowledge-rich, homogenised approach was not what he intended.

Alistair explained his belief that we need to be careful we don't assume that the science of learning tells us *everything* and it can be boiled down to a formula. That brings us back to the driving force behind the piece he wrote for the TES on the over-emphasis on CLT and also gives us a good example of how educational discourse can zoom in on one thing and say we need to do lots of this, whilst ignoring other discoveries and uncertainties.

My social constructivist, progressive nerves were fully calmed as Alistair left us not with answers and certainties, but more questions and wonderings;

- How far might an over-emphasis on cognitive science detract from broader educational considerations?
- Can ideal pedagogy be established by cognitive science?
- Is learning *really* only a change in Long Term Memory?

Written by Paul Tyack, Educational Consultant