CLASSROOM TEACHING

The Curse of Knowledge: Do You Know What I Know?

When a lot of knowledge held by a teacher collides with students' inability to grasp that knowledge, frustration ensues on both sides. Here the authors suggest ways to bridge that disconnect.

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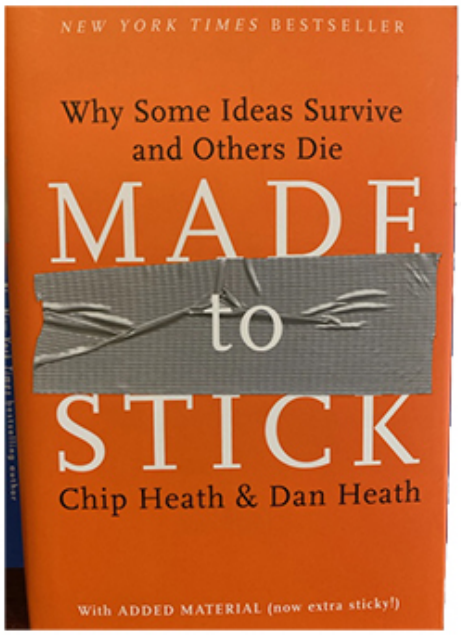

Familiarity with a topic doesn't mean everyone else shares that familiarity.

When growing up, young children's perceptions of knowledge and how that knowledge may be applied in a variety of situations is constantly challenged, often leaving them vulnerable as their limited experiences exposes this knowledge to be fallible because what they see as a viable generalisation does not cover all of the permutations. In the case of a young child the beliefs about the friendly, fluffy family dog called Molly, this cannot be transferred to Brutus, the pit-bull heavily chained in next door's yard. The Curse of Knowledge occurs when the unsuspecting child tries to hug Brutus like she hugs the lovely Molly, but Brutus is not in a cuddling mood!

We have all been raised knowing that "Knowledge is power"; "A little bit of knowledge is a dangerous thing"; "Knowledge is the mother of all virtue"; and "An intelligent heart acquires knowledge, and the ear of the wise seeks knowledge". It is also acknowledged that teaching is a key knowledge profession, and as Hannah Ulferts (2021) observed, it can be claimed that teaching is "mother of all professions". Furthermore, we have personally sat in school classrooms as students, for 13,000 hours seeking knowledge, and therefore, it comes as a dreadful shock to be whacked around the head by the concept of "The Knowledge Curse" which was constructed by Camerer, Loewenstein and Weber (1989). This concept was later popularised in the Heath brothers' (2008) brilliant text, Made to Stick.

The Development of the Concept: "The Knowledge Curse"

In Made to Stick the Heath brothers (2008, p. 19) drew attention to Elizabeth Newton's (1990) Ph.D. research on

Tappers and *Listeners*. In this research the Tappers are given the name of a song (for example, Happy Birthday) and the listener has to guess the name of the song. Newton's results showed that only 2.5% of the tapped tunes were recognised, but the tappers thought that 50% would be recognised.

Here is the problem for teaching and learning: 'When a tapper taps, she is hearing the song in her head... Meanwhile the listeners can't hear that tune – all they can hear is a bunch of disconnected taps, like a kind of bizarre Morse Code' (p. 20). As a result, the tappers become quite agitated because they can hear the song in their heads, and they can't imagine how the listeners cannot pick the tune. This is where we see the Curse of Knowledge at work between the teacher and the student.

In pursuing issues of communication and making an idea stick, the Heath brothers (2008, pp. 246–247) developed what they call the SUCCESS checklist. In any presentation (or lesson) the audience needs to follow six points:

1 Pay attention	Success checklist: Pay attention (unexpected)
2 Understand and remember it	Success checklist: Understand and remember it. (concrete)
3 Agree/believe	Success checklist: Agree/believe. (credible)
4 Care	Success checklist: Care (emotional)
5 Be able to act on it	Success checklist: Care (Listener can recall the story)

Table 1. Communication Framework and SUCCESS Checklist (What do listeners think?)

This model they saw as counteracting ("less subject to ...") the Curse of Knowledge for teachers and presenters and politicians.

The Curse of Knowledge Bias

Every human action has the potential to be influenced by one or more biases. Paul Ratner (2018) in an excellent article explains the roles of nearly 200 cognitive biases, and the Curse of Knowledge is a part of this collection. Eugen Asanu (2018) quoting the work of the Heath Brothers noted that in the world of business, the knowledge held by top executives is difficult to communicate to manager level because of the inbuilt Curse of Knowledge. He noted:

'Top executives have had years of immersion in the logic of conventions of business, so when they speak abstractly, they are simply summarizing the wealth of concrete data in their heads. But frontline employees, who aren't privy to the underlying meaning, hear only opaque phrases.'

The Practical Implications of the Teacher-Students" Curse of Knowledge Experience

Case 1. In personal correspondence, Michael Scriven (September 2000) related a story of a trip he took to the University of California at Irvine, where the first-year students were studying for final exams. "This was before CD-ROMs, but the material was on a big disk, so the same in effect". Students were offered tutoring in the classroom by teachers, or they were allowed access to the same material in the computer lab. The classroom was empty, and the students were in the computer lab working their way through the material there.

When Michael asked students why they were working from the computer programs, the students said:

- Not one tells me that I am stupid;
- I can repeat the lesson as many times as I like, when I like, until I learn the material; and
- The program keeps rewarding me for success.

This is a good example of the implications of the Curse of Knowledge at work. In classrooms the students don't have to be told they are stupid, the teachers' actions, body language and facial expression can send that message

with a word being uttered.

Case 2. A colleague was observing a graduate teacher with a class of Year 10 mathematics students. As a graduate, she was employed to teach mathematics and had a very good understanding of the domain and the intent that she was covering. In her own words she found mathematics "very easy as things just seem to click"

The concept that she was presenting to the students, for the first time was proving a little more difficult that she had anticipated. Throughout the course of the lesson, she found she was having to go back and review a number of concepts to fill what appeared to be knowledge gaps. Forty minutes into the lesson, one of the boys, Mark, who the teacher believed had a solid grasp of maths, raised his hand and said, "I am really sorry Miss, but I just don't understand what you are doing in solving this problem."

During her reflective discussions with my colleague, she expressed her frustration that the kids just did not get it, that it was not an overly complex problem and the methods she was outlining should have made sense.

In this example what we see is an educator who finds the subject very easy, has a vast knowledge of the subject and has a genuine passion for the subject. This situation is not too dissimilar to the 'tappers' example we outlined earlier. Not only did the teacher have the tune in her head, but she also had a network of connections that enabled her to see the outcome before having to work it out. She was wrongly assuming that everyone else in the room could do the same.

Addressing the Curse of Knowledge Bias for Teachers

Cognitive biases matter to teachers because our job is to create learning experiences that enable growth. In their Learning and Development Blog, Dashe & Thomson (2019), outline the detriment of cognitive bias in teaching and learning, 'they can make learners and designers resistant to incorporating new information, they can result in learners remembering inaccurate information, or they can prevent learning from happening altogether.'

When a bias prevents teachers and learners from considering, or being open to new learning, it is imperative that teachers consider their own biases and teach their students remediating mechanisms to the Curse of Knowledge. The Theory of Mind (ToM) concept often referred to as mentalising, is considered an important cognitive tool in separating the mental state of self and others such as beliefs, desires and intentions.

A Theory of Mind definition is outlined by Bora et al., (2009), in their studies on the links between ToM and social functioning of patients, 'the cognitive ability to attribute mental states (such as beliefs, desires, and intentions) to others, as separate to the self' (Bora et al., 2009). Of particular importance to educators is the potential of Theory of Mind (ToM) to facilitate children's understanding of self-mental state (one's own perceptions, beliefs, intent, thoughts, behaviours) and others' knowledge state, specifically being aware that you do not know; knowing what other people know; knowing that other people do not know what you know; and knowing how knowledge comes about. Put more simply, you don't know what you don't know.

The curriculum is rich in opportunities to focus on Theory of Mind in authentic contexts throughout the day. Text analysis and author studies are a rich example of exploring self-perception separate from the authors knowledge state. Through questioning the author's intent, biases, power balances etc. students are privy to not only their own knowledge state and the author's knowledge state but the impact of others' knowledge statements on them as individuals.

Six Pedagogic Strategies that Defeat the Curse of Knowledge in Classrooms

The line – 'Said the shepherd boy to the mighty king: Do you know what I know?' from Bing Crosby's 1962 hit, Do You Hear What I hear? is replicated in every classroom because there is always a mismatch of knowing. Usually, the teacher knows more than the student about curriculum issues, but students prevail in computer games and dinosaurs! From a teaching point of view, we can put strategies in place that overcome the Knowledge Curse by:

1 Breaking the lessons into bite-sized steps, and reviewing the previous steps in the lesson.
2 Reviewing previously taught concepts in Daily Reviews.
3 Using the supportive three instructional processes: I do; We do; You do, in instructional lessons.
4 Implementing "Over the shoulder" support of learning.
5 Constantly checking for learning: Thumbs up, thumbs down, picking non-volunteers (pick names from pop-sticks in a jar). Military Instruction (Johns & MacNeill, 2019) dealing with adult learners constantly reminds instructors to "CFU" (Check For Understanding), and this applies in every classroom, also.
6 Beginning and finishing with the key points critical to the lesson.

Addressing the Curse of Knowledge Bias for School Leaders

Distributed and connected teaching teams are integral to developing cultures of teaching excellence in schools. The collective efficacy of these teams offers a rich environment to facilitate teachers' own self-understanding and awareness of Theory of Mind in order to support their students. Principals need to prioritise opportunities for teachers to interrogate their own biases that may be preventing them and their learners from considering, or being open to new learning. The integration of Theory of Mind (ToM) strategies need to be taught through authentic opportunities across the curriculum, enabling the learner to transfer knowledge and in doing so develop a broader understanding of contextual relevance. In doing so, we lessen the chances of hugging Brutus.

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