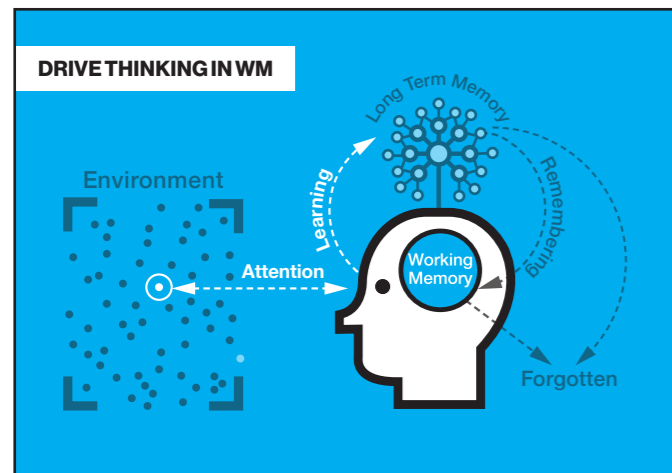
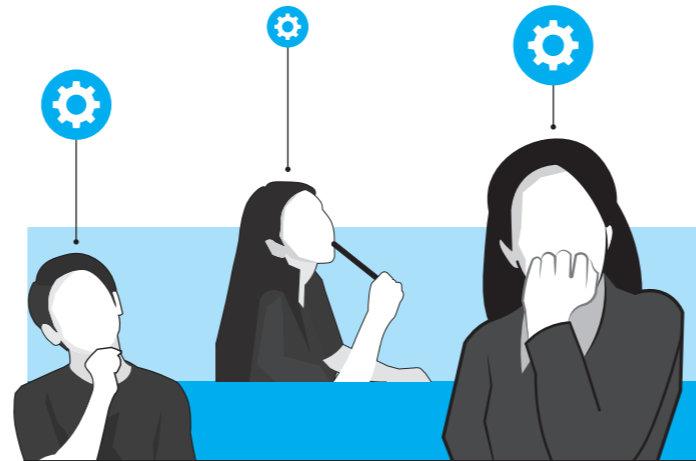


# COGNITIVE ENGAGEMENT

## STRATEGIES TO DRIVE THINKING FROM EVERYONE

### DRIVING HARD THINKING FROM EVERYONE

Cognitive engagement is essential for encoding new knowledge into long-term memory. As Professor Robert Coe explains, "Learning happens when people have to think hard" (2013). To achieve this, teachers must utilise strategies to keep students actively thinking and involved throughout the lesson. Daniel Willingham emphasises this by stating, "Teachers should review each lesson plan in terms of what the student is likely to think about" (2010). This approach ensures that all students, not just a select few, are engaged accurately, preventing the formation of unhelpful knowledge gaps. Utilising questioning strategies and formative assessment techniques provides clear evidence of student progress, enabling informed decision-making. Furthermore, consistent feedback helps students evaluate and solidify their understanding, ensuring the information retained is accurate and meaningful. By driving thinking and carefully considering student thought processes, we create a learning environment where every student can thrive and develop a deep, lasting understanding of the material in long-term memory.



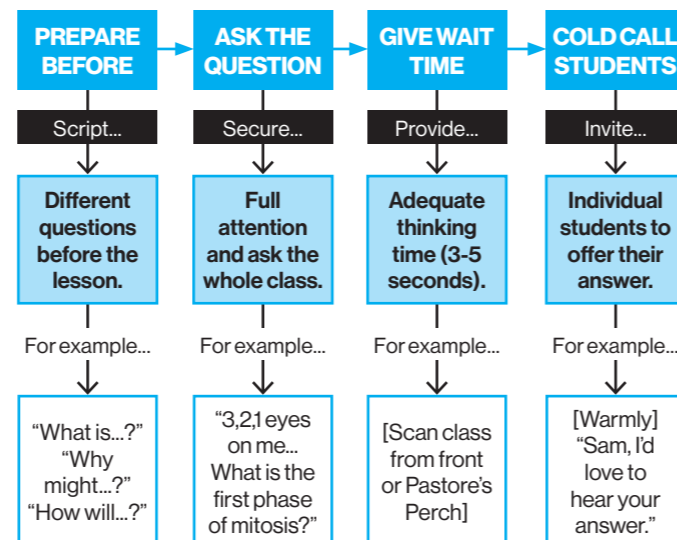
LEARNING & MEMORY DIAGRAM BY OLIVER CAVIGLIOLI

### THINKING HARD MAKES LEARNING STICK

When students think hard, they actively process information in working memory, make connections to prior knowledge and apply new concepts in various contexts. This deep processing promotes a more robust understanding of the information being taught. Cognitive engagement through desirably difficult tasks, generative knowledge, and critical thinking activities stimulates neural pathways, strengthening memory retention. Additionally, effortful thinking often involves retrieval practice, where students recall information from memory, which further solidifies learning. When teachers utilise strategies such as accountable questioning, structured discussions and formative assessments, it encourages this retrieval practice, reinforcing and encoding the learning in students' long-term memories.

### COLD CALLING

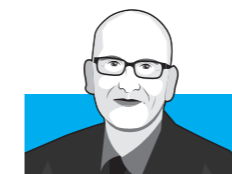
Cold calling, a strategy developed by Doug Lemov in "Teach Like a Champion," engages students and encourages active participation from everyone in the class. This strategy involves the teacher selecting students to answer questions or provide responses without relying on volunteers or those who raise their hands. By calling on students without advance notice, the teacher creates a more inclusive and participatory learning environment. Cold calling ensures that all students are actively involved in retrieval practice and are held accountable for their understanding and participation. This strategy promotes hard thinking, prepares all students to contribute, and prevents a small group from dominating classroom interactions, making it a valuable tool for building classroom engagement. Here's how it can be achieved:



ROBERT COE

"I have come up with a simple formulation: learning happens when people have to think hard."

Improving Education Lecture (2013)



DANIEL T. WILLINGHAM

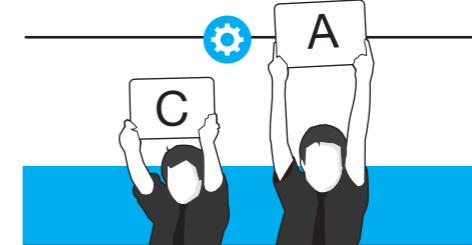
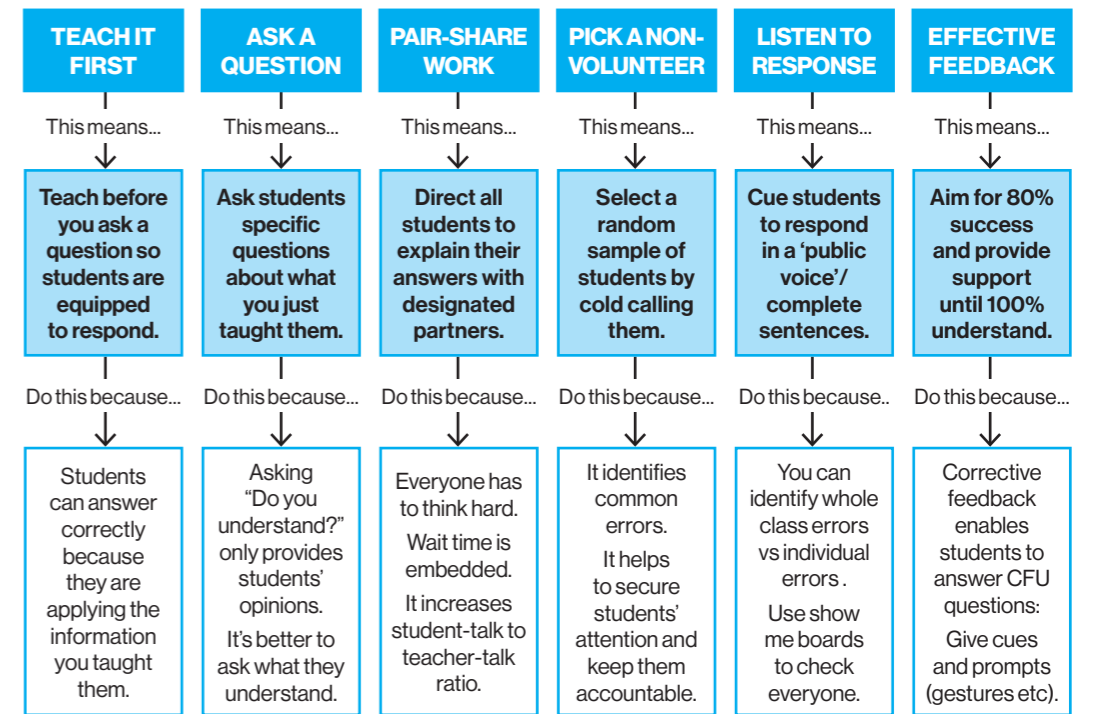
"Review each lesson plan in terms of what the student is likely to think about."

Why Don't Students Like School (2010)

### INPUT-RESPOND-FEEDBACK

An important aspect of explicit instructional teaching is regularly checking for understanding. The 'Input-Respond-Feedback' cycle ensures that instruction is interactive and that students are held accountable for 'hard thinking.' One effective method for this is the 'TAPPLE' approach developed by Hollingsworth and Ybarra. This method involves asking students to respond to a question about the recent lesson and then discussing their answer with a partner in a 'pair-share' format. Following this, cold calling individuals ensures that all students are ready to answer and share with the group. Aiming for at least 80% success and providing feedback is essential to driving thinking and preventing the emergence of misconceptions or errors.

### UTILISE 'TAPPLE' TO VERIFY STUDENTS ARE LEARNING WHILE YOU'RE TEACHING!



### MINI-WHITEBOARDS

Mini-whiteboards (MWBs) are small, erasable surfaces that enhance student engagement and participation, effectively driving thinking from all students and ensuring cognitive engagement. Teachers can use MWBs to pose questions or problems to the entire class, with students writing individual responses on their boards. When students display their answers, teachers can quickly gauge understanding and adjust instruction as needed, ensuring that every student is actively thinking and involved in the learning process. MWBs provide a low-stakes way to gather valuable data from the entire class in a short time.



### THINK, PAIR, SHARE

During 'Think-Pair-Share' (TPS), students first think individually about a question, then discuss their thoughts with a partner, and finally share their insights with the class. Similarly, strategies like 'Turn and Talk' involves students turning to a neighbor to discuss their responses to a question or topic. Both methods promote active participation and cognitive engagement by encouraging all students to articulate their thinking and listen to different perspectives. These strategies ensure that students are actively processing the material, fostering a deeper understanding, and preparing them to contribute meaningfully.