

# SEN Coffee Morning

Cognition and Learning

How to support a child's processing needs and to commit information to their long term memory

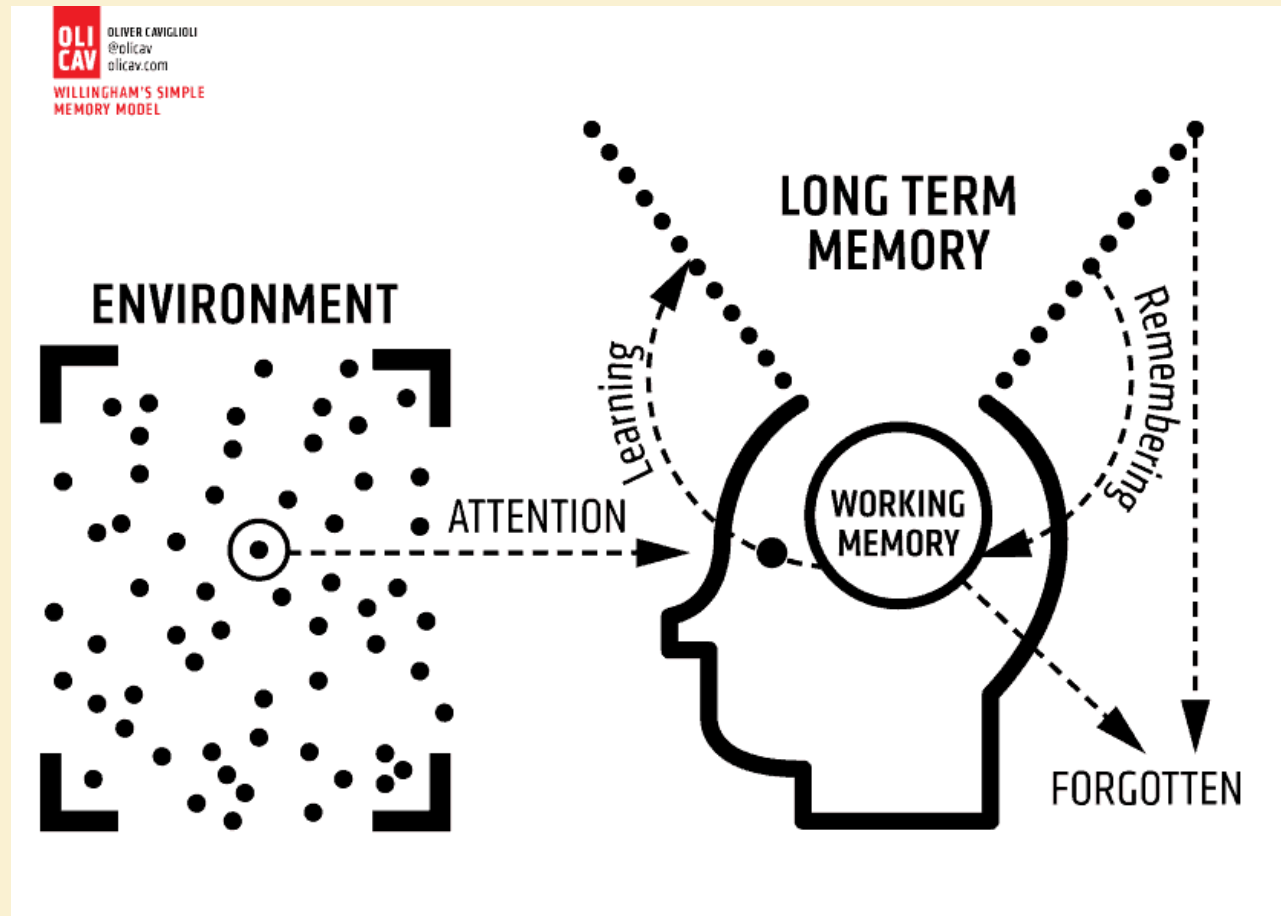
# What do we mean by the terms...?

- ▶ **Cognition** refers to the thinking skills and thought processes that a child/young person has acquired through their prior experience.
- ▶ **Short term memory** refers to the system that temporarily stores a limited amount of information for a brief period, typically seconds to minutes.
- ▶ **Long term memory** refers to the brain's system for storing information for extended periods, potentially lasting from hours to a lifetime.
- ▶ **Processing** refers to how quickly the brain receives, understands, and responds to information

The logo consists of a white rectangular box containing a blue speech bubble shape. Inside the speech bubble, the words "TEACHER TALK" are written in white, uppercase, sans-serif font. The background of the slide features abstract green and yellow geometric shapes on the right side.

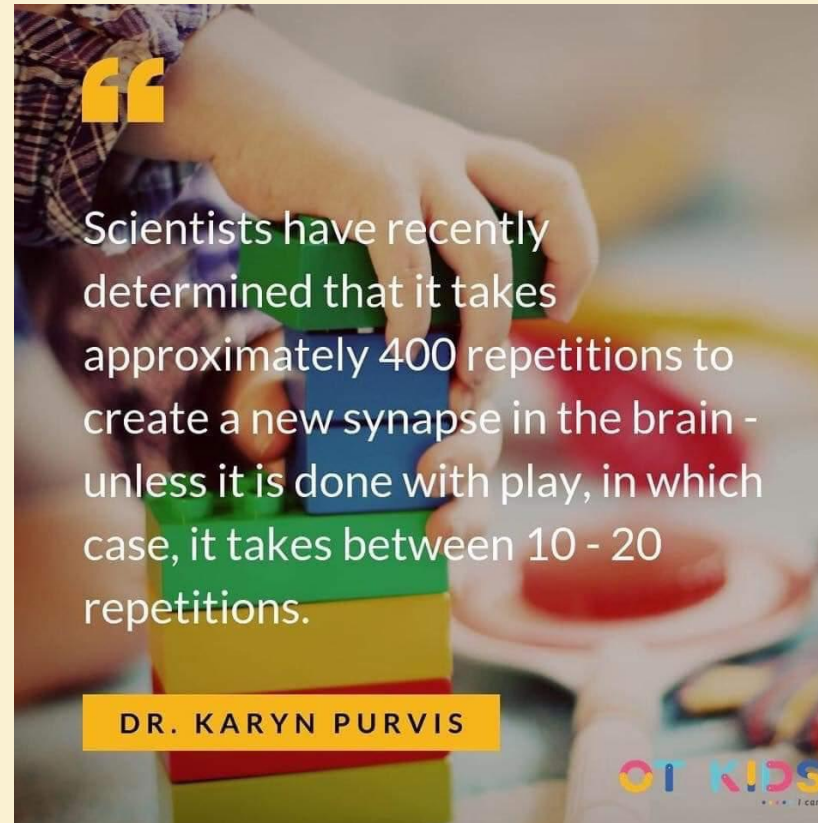
TEACHER TALK

# How do we think?



# How is information committed to our long term memory?

- ▶ Making connections
- ▶ Building synapses
- ▶ Learning in a playful way
- ▶ Repetition of learning



Scientists have recently determined that it takes approximately 400 repetitions to create a new synapse in the brain - unless it is done with play, in which case, it takes between 10 - 20 repetitions.

DR. KARYN PURVIS

OT KIDS  
I CAN!

# What happens if we exceed the capacity of our working memory?

- ▶ Learning halts
- ▶ Causes overwhelm, frustration, anger and disengagement
- ▶ We call this cognitive overload
  - ▶ The amount of information or complexity of the task exceeds our capacity to process it.



# Which strategies do we use to commit information to our long term memory?

- ▶ Reduce stress and anxiety
- ▶ Stimulate your brain, avoid too much routine
- ▶ Exercise, this oxygenates your brain and promotes growth
- ▶ Repetition
- ▶ Chunking of tasks - 400 repetition to learn something - or via play less
- ▶ Learning should be an experience - VAK
- ▶ Spiral curriculum - over learning - less to hold in your short term memory
- ▶ Be explicit with connections - Last time we came here we...
- ▶ Be playful and make it fun
- ▶ Memory prompts such as mnemonics



# How do we reduce the cognitive overload?

- ▶ Think carefully and be clear about the key learning - what is the big idea that you want them to take away
- ▶ Ensure that learning is building on prior knowledge
- ▶ Remind them which bits are prior knowledge
- ▶ Chunk or limit the amount of information you ask them to hold in their head
- ▶ Let them write it down or take notes
- ▶ Offer visuals to aid their understanding
- ▶ Reduce teacher talk
- ▶ Give thinking time



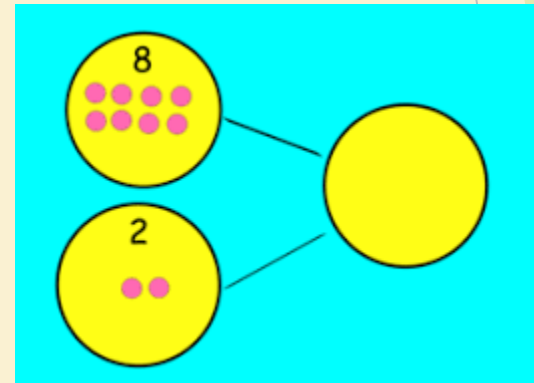
# Does everyone process information in the same way?

What thought process do you use to solve this problem?

$$5+3=_$$

If you were a child you might have...

- Counted on
- Used manipulatives to physically combine the amounts
- Recalled your number bonds, I know  $2+1=3$  so  $5+2=7+1=8$
- Used a number line to count on
- Used the inverse, I know that  $8-3=5$  so  $5+3=8$
- Used a part whole model to visualise the equation
- Or used knowledge of a fact families -  $5+3=8$ ,  $3+5=8$ ,  $8-3=5$  and  $8-5=3$



# Is everyone's processing speed the same?

- ▶ Think about how long it took you to answer the question on the previous slide. Each person was different.
- ▶ Processing speed can vary from person to person.
- ▶ Processing can be influenced by cognitive ability, additional learning needs or simply the amount of prior knowledge available to you for the task in hand.
- ▶ On average it takes a child \_ seconds to answer a question. For some children it can take \_ seconds.



# How do we assess children's processing and cognitive ability in school?

- ▶ BPVS
- ▶ Processing Test



Forward	Backward
Sequences	
5, 8, 2	6, 2, 9
6, 9, 4	4, 1, 5
6, 4, 3, 9	3, 2, 7, 9
7, 2, 8, 6	1, 9, 6, 8
4, 2, 7, 3, 1	1, 5, 2, 8, 6
7, 5, 8, 3, 6	6, 1, 8, 4, 3
6, 1, 9, 4, 7, 2	5, 3, 9, 4, 1, 8
3, 9, 2, 4, 8, 7	7, 2, 4, 8, 5, 6
5, 9, 1, 7, 4, 2, 8	8, 1, 2, 9, 3, 6, 5
4, 1, 7, 9, 3, 8, 6	4, 7, 3, 9, 1, 2, 8
5, 8, 1, 9, 2, 6, 4, 7	9, 4, 3, 7, 6, 2, 5, 6
3, 8, 2, 9, 5, 1, 7, 4	7, 2, 8, 1, 9, 6, 5, 2
2, 7, 5, 8, 6, 2, 5, 8, 4	
7, 1, 3, 9, 4, 2, 5, 6, 8	



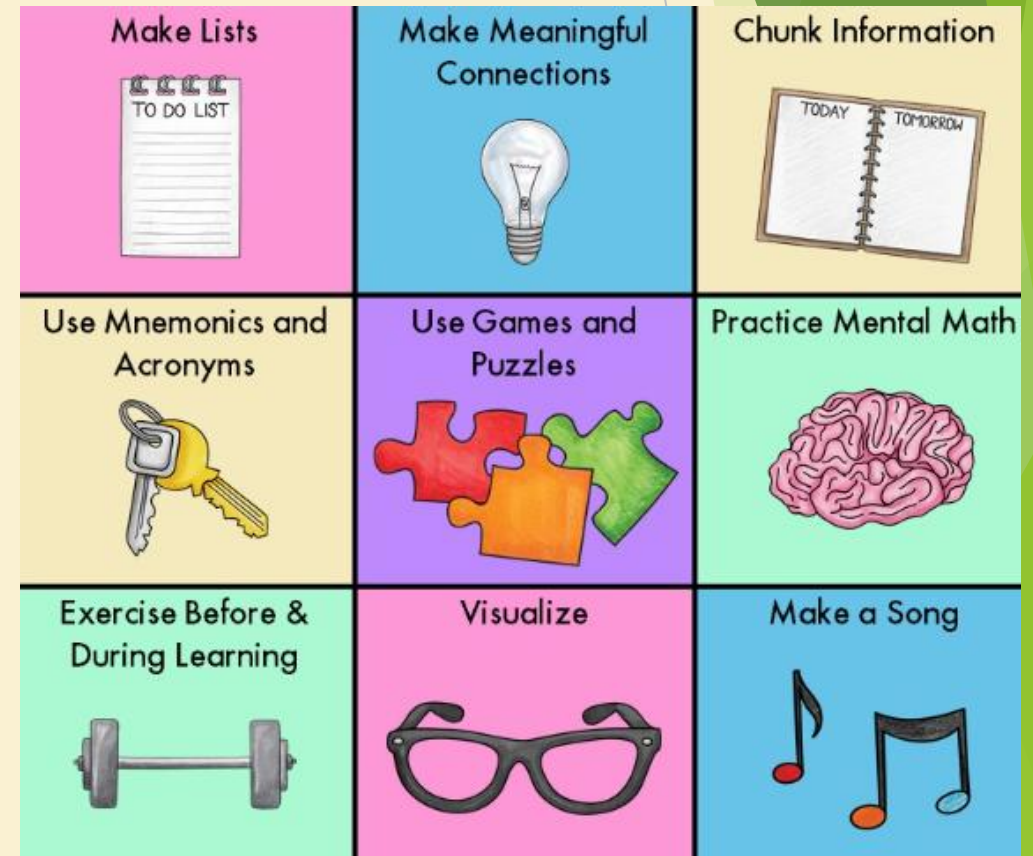
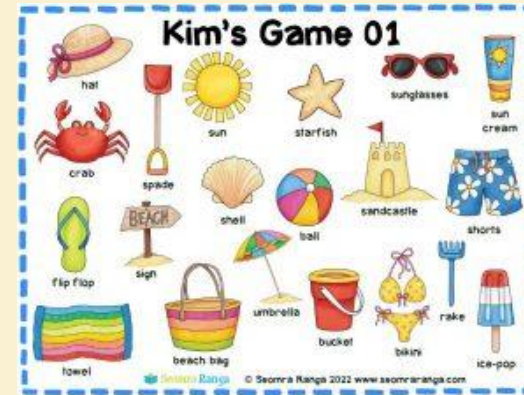
# How can we improve working memory?

- ▶ Play Memory Games
- ▶ Ask children to remember an event and recall it
- ▶ Offer a learning experience or VAK approach
- ▶ Repetition of learning
- ▶ Chunking of tasks
- ▶ Reduce the visual stress
- ▶ Spiral curriculum
- ▶ Be playful or making learning fun
- ▶ Model making connections
- ▶ Reduce the cognitive load
- ▶ Give extra time to process



# How can you help at home?

- ▶ Reduce adult talk
- ▶ Give thinking time
- ▶ Play memory games that move away from the routine
- ▶ Asking them to remember something and recall it
- ▶ Model making connections
- ▶ Chunk the information
- ▶ Make it fun or playful
- ▶ Repetition, always return to the learning regularly



# Questions & Coffee

