



WORKING MEMORY

DYSLEXIA SCOTLAND EDUCATION CONFERENCE 27 OCTOBER 2018

Margaret Glasgow, Addressing Dyslexia Toolkit Working Group

TODAY'S SESSION

- Neurodiversity, Working Memory and the Learning Environment
- Lifelong impact of WM
- 8 Principles of WM
- Principles into practice

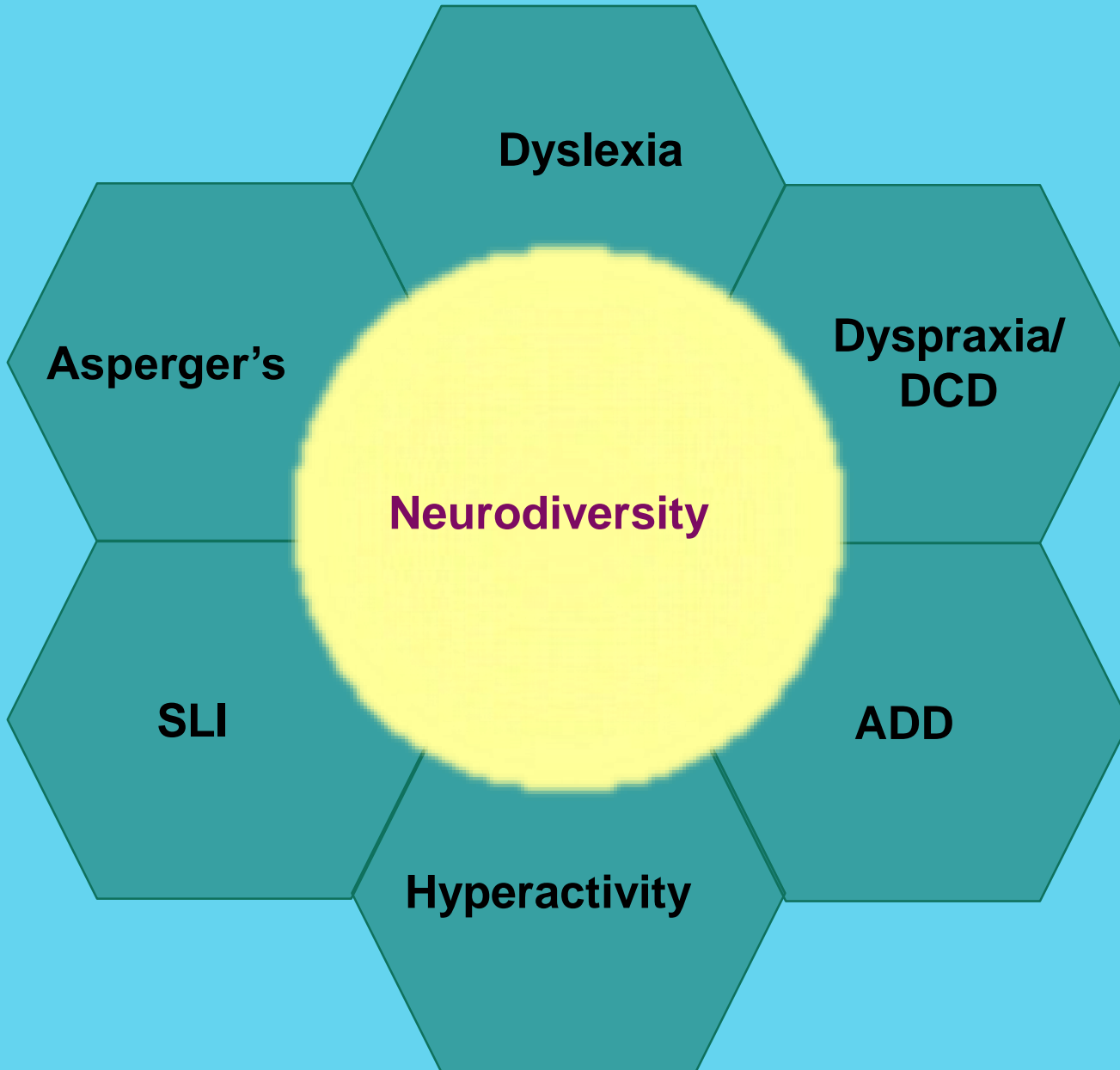


WHAT DOES NEURO-DIVERSITY MEAN ...

“The neuro-diverse classroom contains people who have been given various labels encompassing cognitive, educational, emotional and behavioural issues, and also people who have not been given those labels.” (Armstrong, T. 2010)



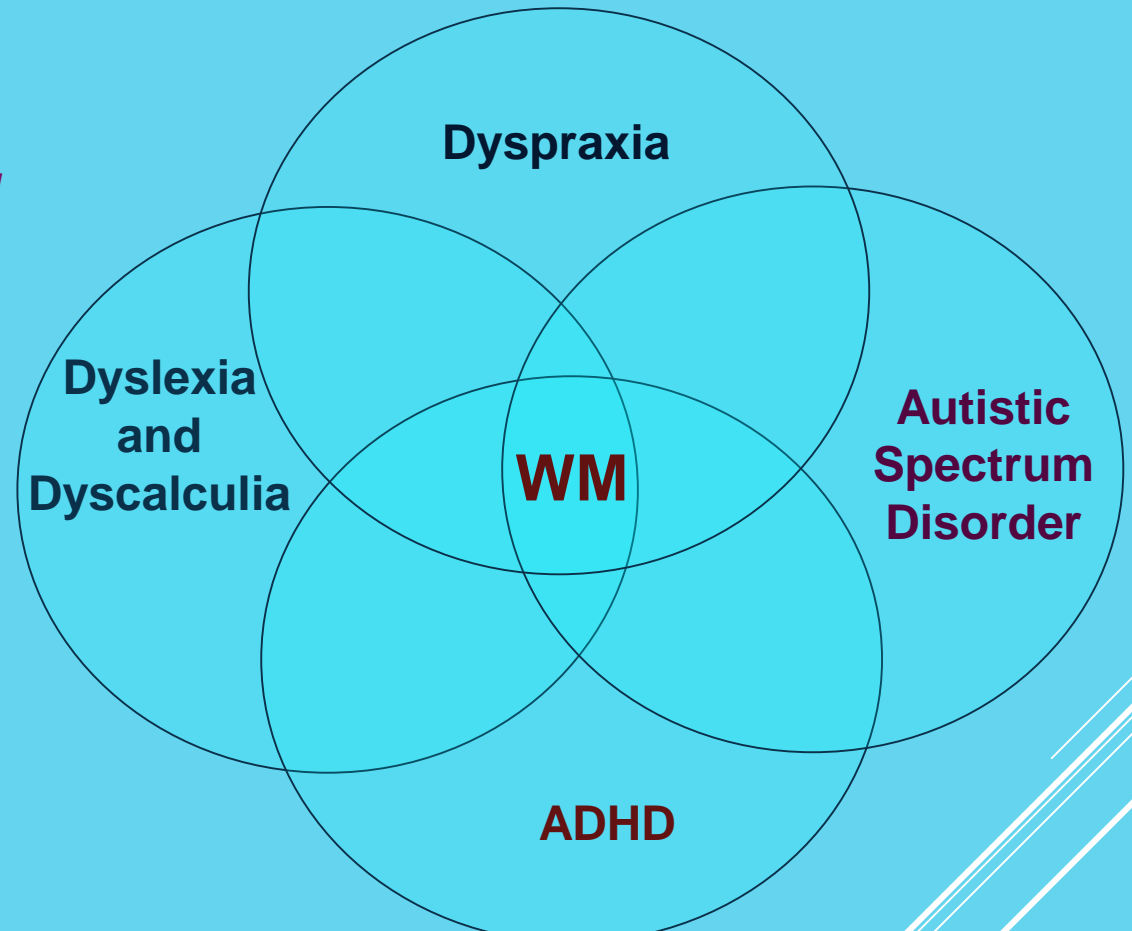
Inclusion



Meeting
a diverse range
of needs
calls for
an appropriate
but
diverse range of
strategies.

Working Memory: a Common Factor

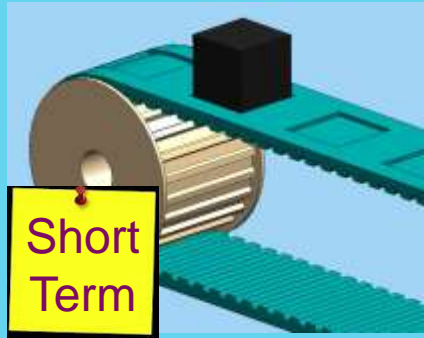
*Improving Working Memory;
Supporting Students' Learning
Tracy Packiam, Alloway 2011*



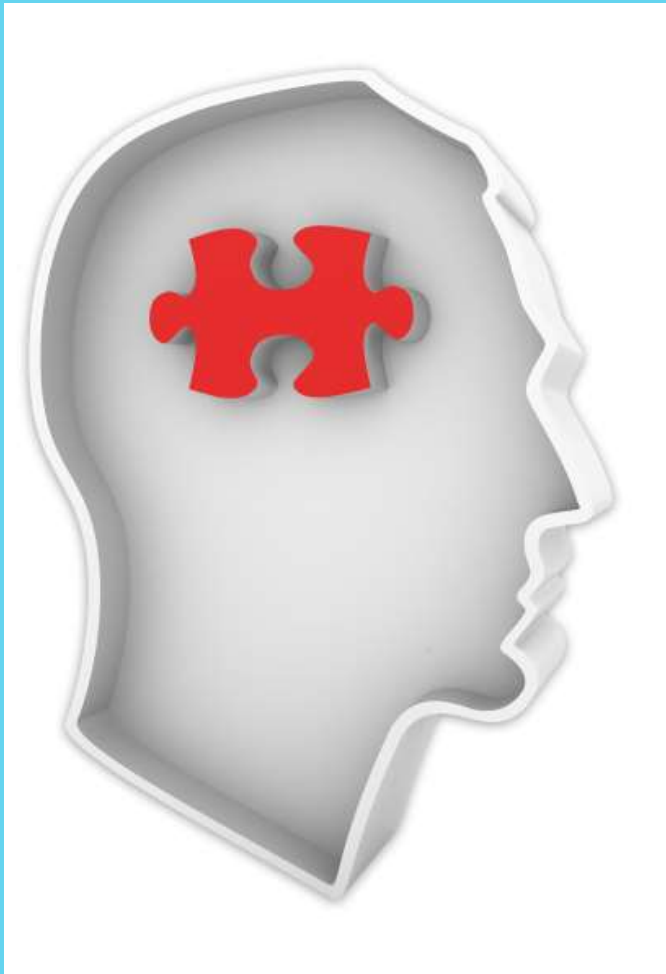
*“Of all the environments humans function in, the **learning environment** is the most notorious for the continual overloading of working memory...”*

Working Memory and Academic Learning . Milton J Dehn

Memory is generally thought of as a process of encoding, storing and retrieving information



Working memory is an essential function in every day life, it...



processes **all stimuli** we encounter

delegates it to the different parts of our brain that can take action

allows us to **block** out unnecessary information

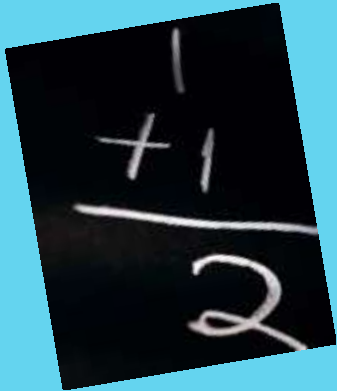
keeps us updated on what's happening – and keeps us **focused** on what matters

WORKING MEMORY IMPACT IS LIFE LONG

School

Training/ Higher Education

Work



Relationships

Social skills

Achieving goals



“Working Memory is important for successful learning in individual classroom activities.”

(Gathercole & Alloway, 2008).

Children with limited Working Memory are often unable to meet the memory demands of many structured learning activities.





A learner with poor working memory skills has to work harder to keep information in mind; instead of being able to both hold and process information, the learner is working hard just to hold the information.




“Of all the environments humans function in, the **learning environment** is the most notorious for the continual overloading of working memory...”

Working Memory and Academic Learning

Milton J Dehn 2011

Working Memory Overload

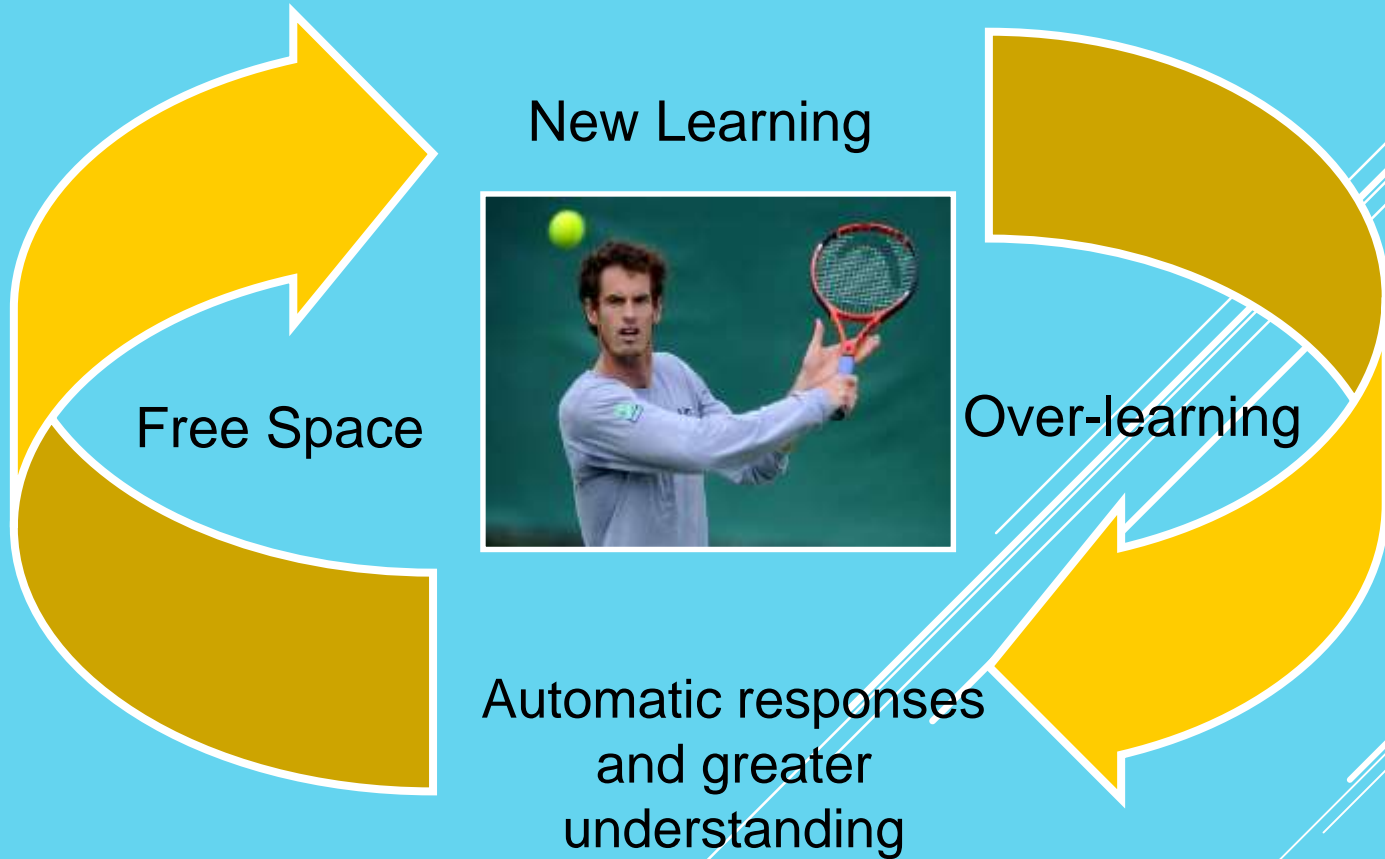
- Learning is a cumulative process
 - It involves **complex instructions, sequencing and/or demanding mental processing**
 - The WM becomes **overloaded**
 - Resulting in the information being **permanently lost**
- 

WM overload...



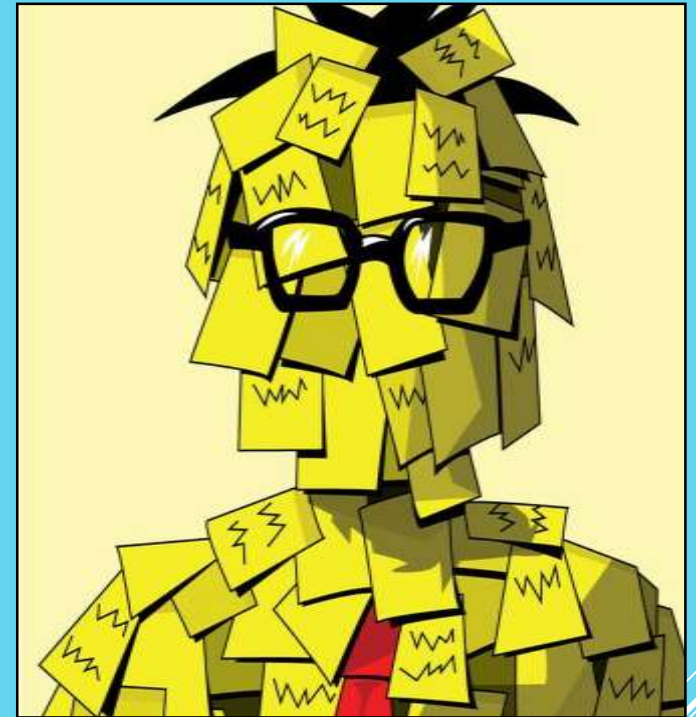
- The learner is unable to **proceed**, unless they are able to **access** the information again
- The learner is either forced **to guess** or **abandon** the task
- Working memory failure can result in giving up on tasks and loss of interest

Working Memory: Overlearning



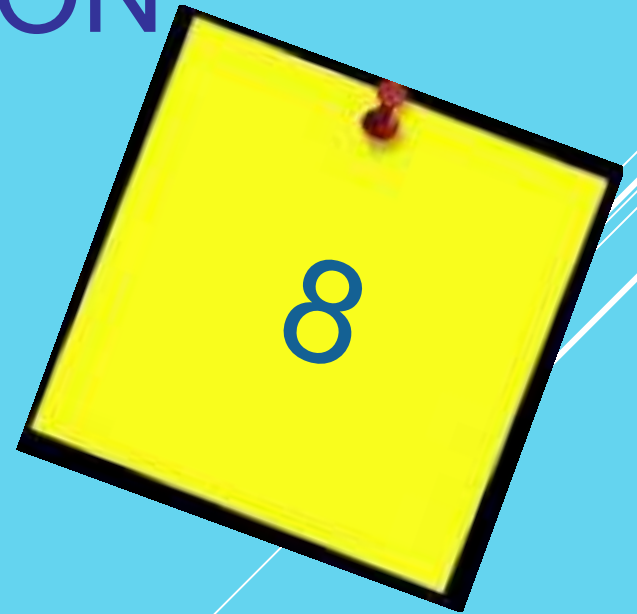
“The approach that we recommend for children with poor working memory can be stated simply: avoid working memory failures...”

Gathercole & Alloway, 2008.



So... how do we do that?

PRINCIPLES OF WORKING MEMORY INTERVENTION



1

**Recognise
the signs
to look for**

- incomplete recall
- unable to follow instructions
- difficulty keeping place
- abandons task
- easily distracted

How could you help a learner who displayed all or some of these?

What are you doing?

What's your next step ...?

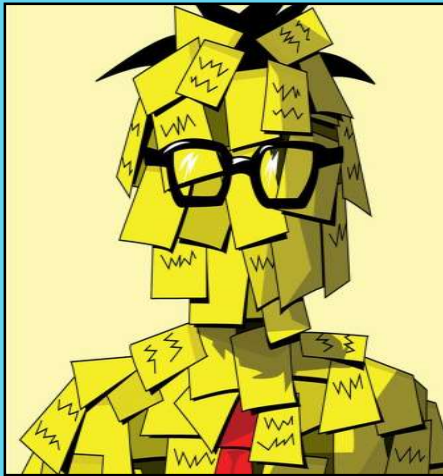
What could you do instead...?

Who did I say you would be working with?

Monitor

2

The load on Working Memory



3

Evaluate

4

Reduce



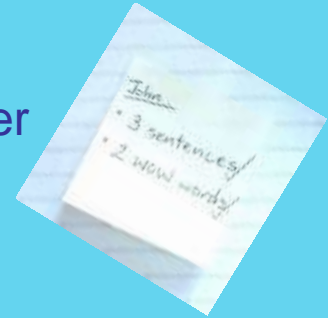
Break the learning down



visual
hooks
& clues

short, simple
instructions/ tasks

chunk down steps
and coach the learner
to do so



Connect the learning

seek and create links

Use prior knowledge to forge links

Simplify Mental Processing

use simple grammatical
structures

consider the sequencing
of questions/ instructions

Use visuals and
colour coding/ numbering
strategies

**Awareness
of
processing
demands**

Demanding concurrent
processing tasks
increase demands on WM

This increases the chances
of WM failure



6

Repeat

- use varied repeat strategies
- provide over learning
- praise when they ask for repeats

7

**Teach
the use
of
memory
aids**

8

**Help the
learner find
their own
strategies**

How... Why... What ...

Task:

Think of a routine task you often set your learner/child.....

- ▶ List all the demands on the working memory
- ▶ Think of ways to reduce these demands

Recap

8 PRINCIPLES OF WORKING MEMORY INTERVENTION

1. Recognise
2. Monitor
3. Evaluate memory loads
4. Reduce memory loads
5. Awareness of processing demands
6. Repeat
7. Coach in use of memory aids
8. Develop learner's own strategies to support memory

THINK OF YOUR CLASS...

do you recognise this child?

- Easily distracted

- Struggles with

- Finds it hard to



How could you help a child who displays all or some of these?



See Dyslexia Differently



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