

Understanding the 'how' of learning from cognitive science



Driver Youth Trust

What's the idea?

An understanding of the thinking processes that pupils go through is helpful, from planning lessons to delivery. Literacy tasks, by their very nature, demand focus. Therefore, a consideration of working memory capacity and cognitive load can help you to plan tasks with improved accessibility for all pupils.

Retention and recall rely on understanding the information presented. Presenting too much information at once can result in cognitive overload (Sweller, 1998), meaning information is unlikely to be retained.

What does it mean?

Research into working memory, capacity and effective storage of information has identified several strategies to support the successful storage of new

information (Alloway and Alloway, 2015). Chunking information leads to schemas which makes retrieval easier. Limiting the amount of information and then repeating that information reduces the cognitive load and strain on working memory, thus increasing the chances of it being retained.

Long term memory is informed by the working memory – if the working memory is overloaded, this results in poor retention of information and can lead to problems with retrieval. Learners with good retrieval skills use effective strategies (see below) almost instinctively, but for those that find retention and retrieval a challenge, these skills need to be taught.

What are the action points for teachers?

It is useful to factor into planning a regular check on the amount of information being taught at any one time. What are the absolute essentials? Ensuring these are repeated and understood fully will allow a stronger foundation on to which detail and related content can be built.

It can be useful to think of how information is processed in terms of different phases, a little like a computer, although, in reality, our brains are much more complex than this.

Weave in repetition and develop a vocabulary that supports an awareness of working memory. Add hooks to the information you want them to remember. The more connections you can explicitly make, the easier it will be to remember.

THE DRIVER YOUTH TRUST IS A CHARITY COMMITTED TO IMPROVING THE OUTCOMES OF YOUNG PEOPLE WHO STRUGGLE WITH LITERACY.

WANT TO KNOW MORE?

- » Alloway TP and Alloway RG (2015) *Understanding Working Memory* (2nd edition). London: SAGE Publishing.
- » Education Endowment Foundation (2018) *Metacognition and self-regulated learning*. Guidance report. Available at: https://educationendowmentfoundation.org.uk/public/files/Publications/Metacognition/EEF_Metacognition_and_self-regulated_learning.pdf (accessed 27 November 2019).
- » Paivio A (1971) *Imagery and Verbal Processes*. New York, NY: Holt, Rinehart and Winston.
- » Sweller J (1998) Cognitive load during problem solving: Effects on learning. *Cognitive Science* 12: 257–285. See also this explanation of cognitive load: <https://www.instructionaldesign.org/theories/cognitive-load/>