Optimising Cognitive Load

Tom Sherrington and Sara Stafford

What's the idea?

Learning is most effective when cognitive load is optimised.

What does it mean?

The limit creates a form of bottleneck that restricts the flow of knowledge into our long-term memory. We need to break down new learning into small chunks that can be processed and linked to schemas piece by piece, and avoid extraneous material getting in the way.

When we try to solve problems, we can be impeded if part of our working memory is taken up trying to recall information. The more fluent and automatic our recall is, the more working memory space we have to use that information to solve problems. Fluency develops through retrieval practice.

What are the implications for teachers?

Plan learning sequences carefully so that concepts flow well, and build steadily and cumulatively. Allow students to secure confidence through modelling and practising each step, rather than having to handle a whole sequence at once, for example, with multi-stage problems in maths. Worked examples are a powerful tool, well supported by cognitive load theory.

Also notice when students begin to develop some fluency so that you do not then overload them with extraneous support; let them use the expertise they've developed. Try to guide practice, but not too much.

Strip out unnecessary layers of distraction – visual noise, actual noise, filler material – and avoid overload when you are presenting new learning, for example, by asking students to listen and read simultaneously. You can, however, increase their intake of information by using images and diagrams to support what you say. This is 'dual coding', which works well.

TOP TIP / **Use lots of worked examples for any task or problem so students learn the method as well as how to apply it. Also use plenty of drills that support students' automaticity when recalling information.**

Want to know more?

Ollielovell.com Interview with John Sweller

Barak Rosenshine Principles of Instruction: Research-Based Strategies That All Teachers Should Know. American Educator Vol. 36, No. 1, Spring 2012, AFT Strategy 2 Small Steps; 4 Provide models; 8 Provide scaffolds then remove them.

Peps McCrae, Memorable Teaching: Leveraging memory to build deep and durable learning in the classroom (2017) Createspace