

Tips to minimise cognitive load

Two main questions to ask when planning

- What do I want students to be focusing on?
- Have I told them everything they need to know for this task?

Minimise distractions

- Maybe don't use an editor for a week or two. Use codepen.
- Code Cheat Sheets - this way they can focus on the problems.
- Definitions - either on the board or handouts (if you have time)
- Highlight relevant information - 'VScode Dimmer' extension is great!

Keep explanations clear and simple

- I do, we do, you do.
- Keeping explanations between between 5-10 minutes
- If you ask questions. Say the question. Pause. (5 seconds). Ideally don't talk. Then pick someone to answer.
- Minimise content - break into steps. Lots of short explanations are better than one long one.
- Minimise text on slides. And highlight (e.g. bold) key words.

Give lots of time to reinforce ideas

- Memory based starters (discuss with your partner what you learnt last time)
- Summaries at the end (e.g. get them to write down 3 things they've learnt)
- Exit tickets
- Connecting what you're learning today to what you've learnt previously when you explain stuff

Tips for students

- Learn touch typing - if they're having to think about typing, that's another thing that is taking up working memory.
- Flashcards (Anki is very good) to memorise definitions and syntax
- Make your own cheatsheets. Or bring them in.

Further reading

Generally I've tried to find free sources, and easy to access material.

Cognitive load theory

<https://improvingteaching.co.uk/2017/11/19/planning-lessons-using-cognitive-load-theory/> (also generally just a great teaching blog)

<https://teachthought.com/learning/cognitive-load-theory-definition-teachers/>

Memory

<https://science.howstuffworks.com/life/inside-the-mind/human-brain/human-memory2.htm>

<https://www.learningscientists.org/blog/2019/4/25-1> <also generally great place to look for ideas. Very good articles on improving memory.

Book: Dr Julia Shaw 'The Memory Illusion' <- more of a general view of memory

TV: Less about teaching, but VOX have just done a documentary on Netflix about Memory

Direct Instruction

Good explanation on wikipedia: https://en.wikipedia.org/wiki/Direct_instruction

<https://learningspy.co.uk/featured/back-to-group-work/> <- bit more indepth, talks about group work, and direct vs discovery learning.

Discovery Learning (sometimes also called Inquiry learning)

Good short summary: <https://www.learning-theories.com/discovery-learning-bruner.html>

Good argument for it:

<https://learningspy.co.uk/learning/is-it-better-to-be-told-or-to-discover-a-fact/>

Arguments for discovery learning - anything by Jo Boaler is always good, she's well respected and a proponent of it.