

A Teacher's Guide to the Learning Brain: Long-Term Memory

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OUTSIDE WORLD

Early Encoding

1. Forgetting & Desirable Difficulties
 - Spacing > massing
 - Interleaving > blocking
 - Desirable vs. undesirable:
 - extra thought → success
 - stress/motivation/attention/WM
2. Pretesting

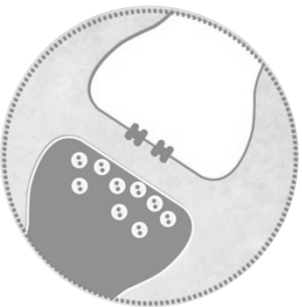
Subsequent Retrieval

3. Blank > Full Page Review
 - Facilitates consolidation & encoding
 - + Facts/concepts; near & far transfer
 - = feedback; test anxiety; multiple choice
 - - Beware “retrieval induced forgetting”
4. Restudy Location

Encoding ↔ Retrieval

5. Prior Misconceptions
 - Identify (resilient mistake)
 - Build competing network

Consolidation of LTM



Overcoming Prior Misconceptions

1. Identify a central misconception that hinders understanding of a topic.
 - Work backwards from most persistent or common misunderstandings.
2. Design a problem students can't solve with their false beliefs.
3. Once they get stuck, provide the correct belief that helps them finish the problem.
4. In initial phases of the unit, point out the places where their prior misconceptions would have led them astray.
5. Increasingly, build in opportunities for students to fall back in to those misconceptions.
6. Rinse, repeat.