Preparing learners for KS5 linear examinations

Time for some mind-reading!

Imagine you walked into a bank one day when a robbery takes place.

What images pop into your mind when you think of this scene?

(Do not discuss your ideas)

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How many of you thought…

- The bank robbers were male?
- They wore some kind of disguise?
- They wore dark clothes?
- They demanded money from the cashiers?
- They had a getaway car waiting outside the bank?
- The getaway car had a driver waiting in it?

Tuckey & Brewer (2003)

Found that most people thought:

- bank robbers were male
- they wear some kind of disguise
- they wear dark clothes
- they demand money from the cashiers
- they have a getaway car waiting outside the bank
- the getaway car has a driver waiting in it

Furthermore:

- When they showed people a video of a staged bank hold-up, Ps had better recall for elements of the film that conformed to their schema than to elements that did not

The role of schemas in learning – the importance of addressing misconceptions

https://youtu.be/5LdJaip6FJQ

Up to 4.59

Misconceptions: 5.00 – 5.28

Key points:

- Students need to build a correct schema for a specific topic
- Misconceptions can affect students' schemas and how they process/recall information

Action research suggestions:

- Give students a list of questions to answer during a lesson rather than making notes

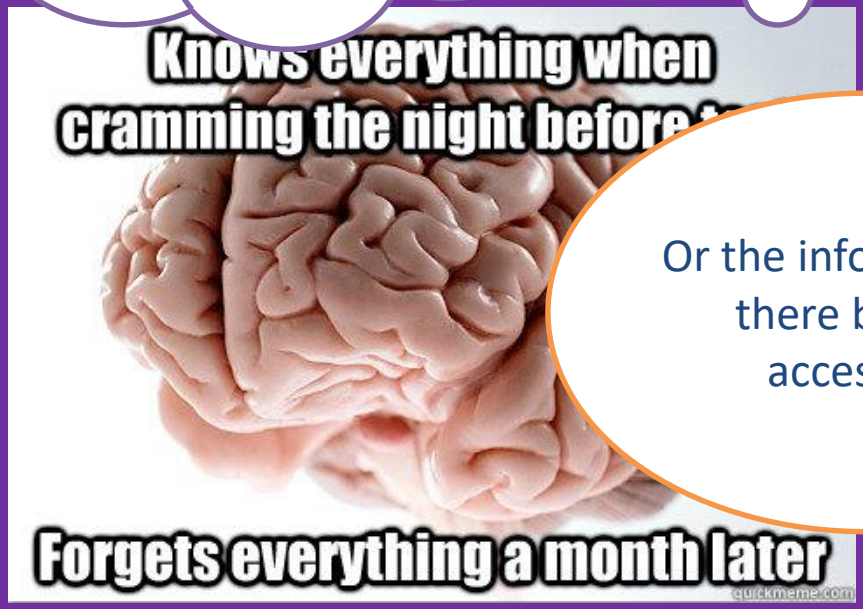
- Address misconceptions at the start of a new topic – e.g. True/False quiz on common misconceptions with answers/discussion at the end of the quiz OR get students to write down what they know about a topic and either collate them on the board (e.g. using post-its) or get students to put them in a box prior to the lesson so you can start the topic by tackling the specific misconceptions that students have

Can you remember…

- The name of the new president of Zimbabwe?
- He is ‘affectionately’ known as a predatory animal whose name begins with C
- His surname begins with M
- Emmerson Mnangagwa aka ‘The crocodile’

CUES??

However, if you are suddenly given a cue (reminder) then you may suddenly be able to bring it to mind



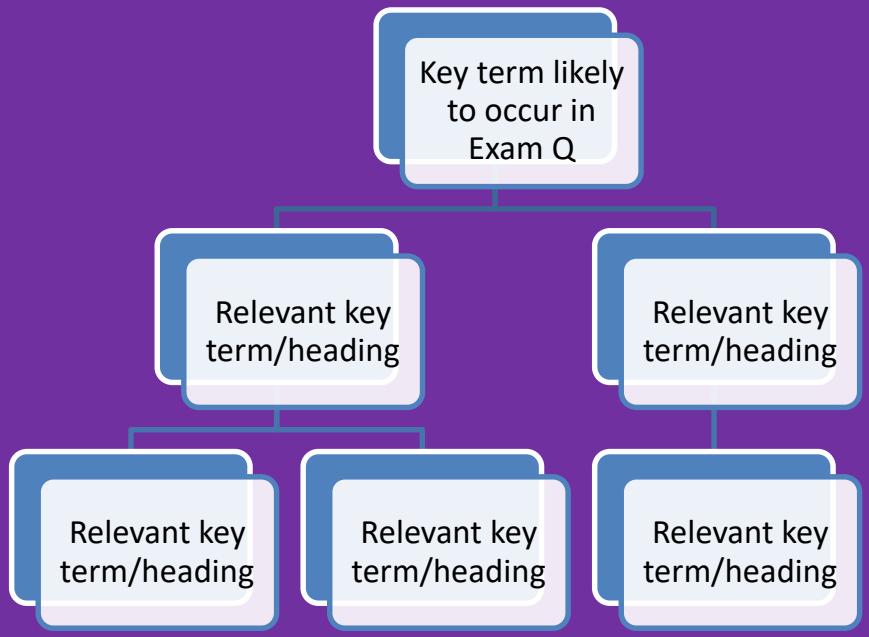
- Duration of LTM = UNLIMITED!

Or the information is there but not accessible

Possible that the information was never stored in LTM in the first place

Action research suggestions based on cue-dependent memory

- Provide a learning frame, the skeleton of which is key terms – the key terms will act as cues
- The heading/lead term should be something likely to appear in an exam Q or from the specification
- Get students to do essay plans/make notes around this structure and then assess them on it



Action research suggestions based on cue-dependent memory

- Give students headings under which to make notes for a topic, particularly headings that are similar or the same as a potential exam question

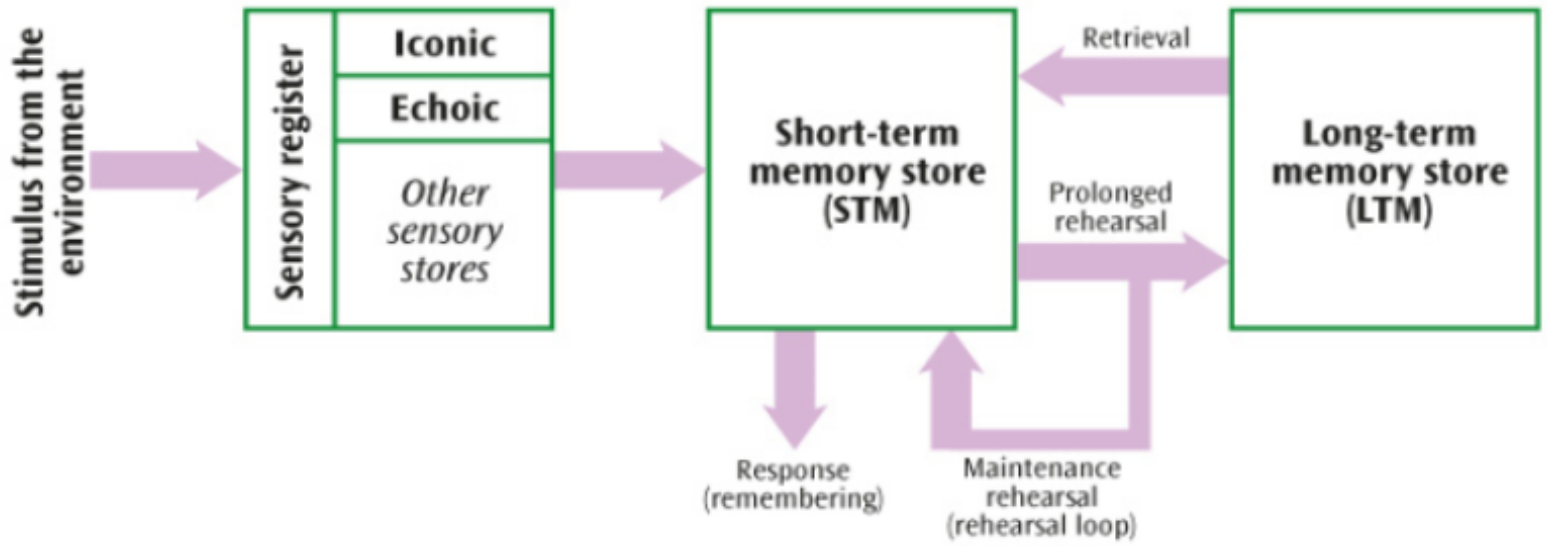
- Highlight specific key terms they should know from the topic

- Plenary activity: Get students to recall the key facts, giving them specific key terms as triggers

- Plenary activity for procedural tasks (e.g. maths/essays/exam-style questions): Get students to list/bullet-point the steps involved in answering a specific question

The Multistore Model of Memory

Richard Atkinson and Richard Shiffrin's (1968, 1971) **multi-store model** describes how information flows through the memory system (see diagram below). The model suggests that memory is made up of three stores linked by processing.



Key point:

- Rehearsal/repeated exposure increases the likelihood that information will be transferred to LTM

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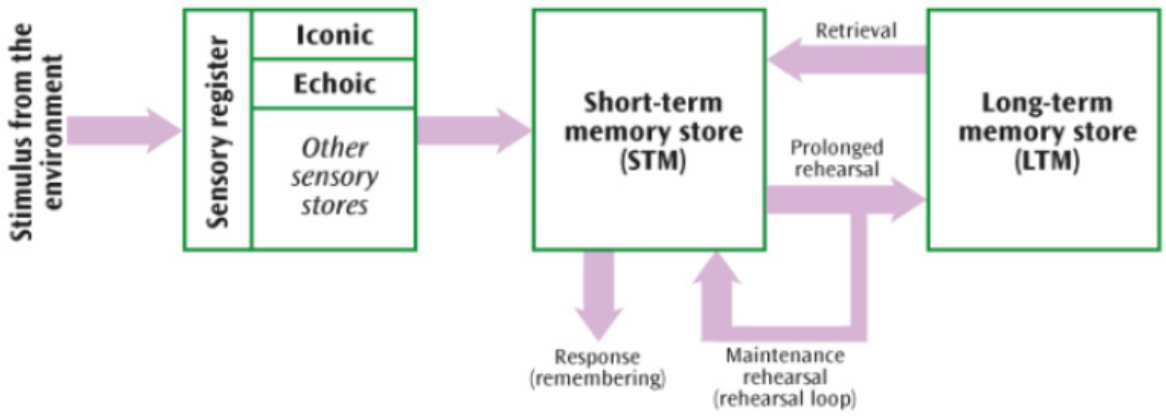
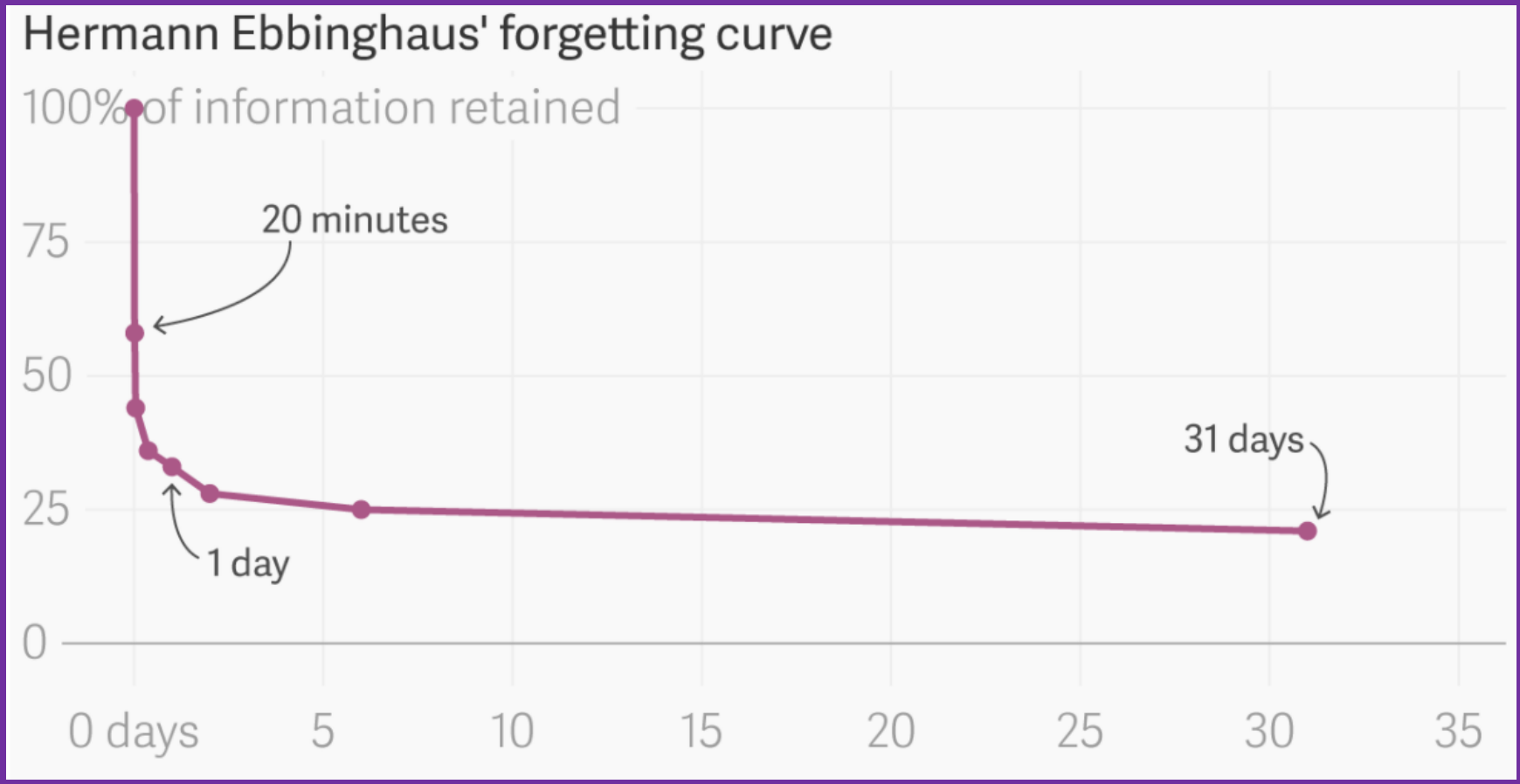


Action Research suggestions:

- Consider using 'cumulative knowledge' assessment at the end of units/topics
- E.g. in Psychology one of the first topics is Research Methods and the 2nd is Memory, so the 2nd end of unit assessment should include Qs on both Research Methods and Memory
- You could try this with one class and not the other and compare their Mock/Threshold scores. We will discuss your findings in Session 4 (last Action Research session)

What does Ebbinghaus's forgetting curve tell us about retention for students?

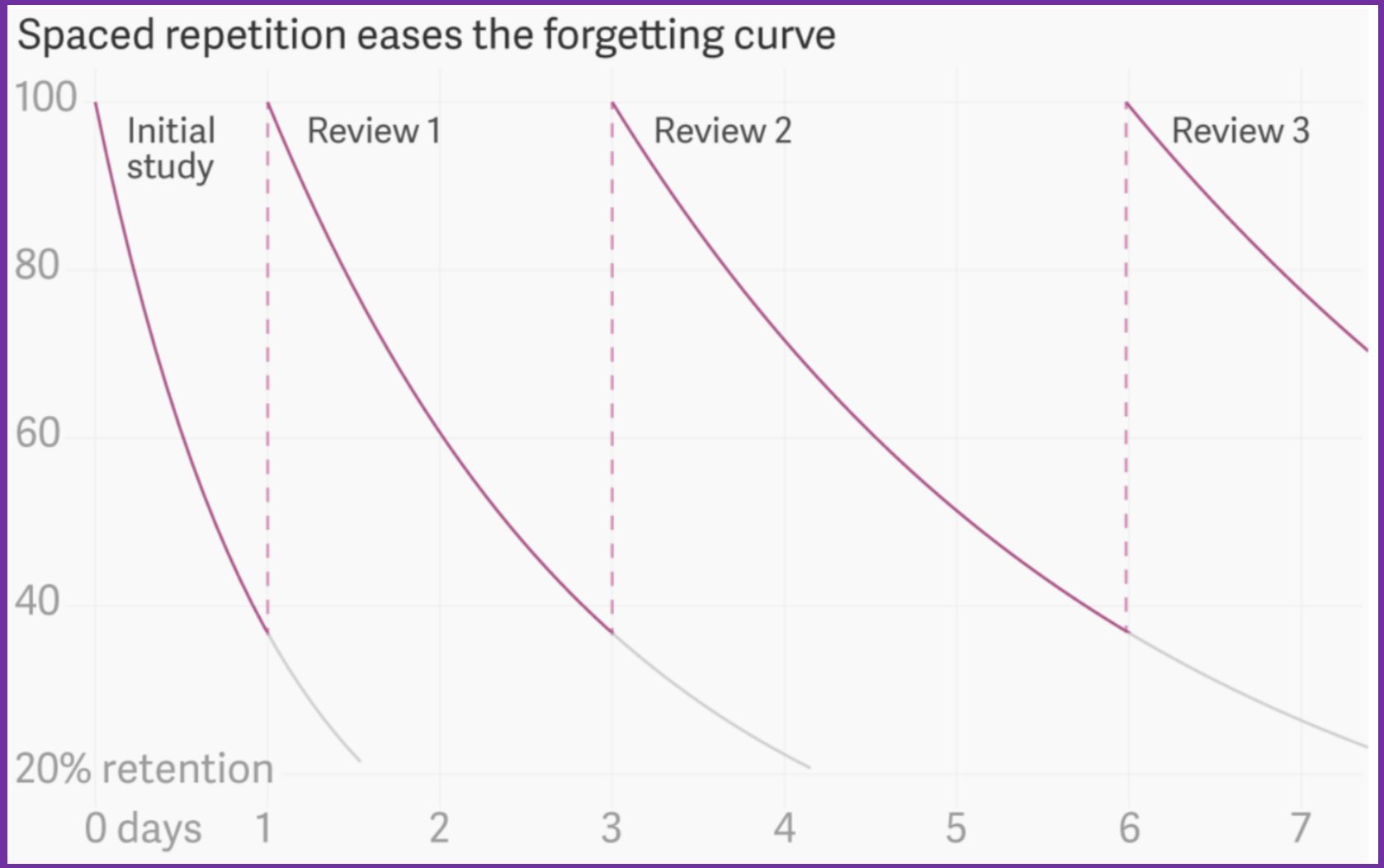


Evolution vs Learning for Exams

Learning has an evolutionary purpose: Among species, individuals that adapt to their environments will succeed. That's why your brain more easily retains important or surprising information: It takes very little effort to remember that the neighbor's dog likes to bite. Remembering the dog's name is harder. One ensures safety, the other is just a random fact.

But today, the kinds of things humans want to learn are rarely focused on survival; we also use our adaptive, evolutionary memory to remember new languages, 11-step face-washing routines, obscure vocabulary words, and facts about Star Wars. The trick to doing so, once you've decided to acquire a new skill or build up your knowledge in a particular area, lies in convincing your brain that the information matters. In other words, you have to overcome the "forgetting curve."

What does this graph suggest?



How can you make retrieval practice work for you and your students?

- Students need to think back to a prior time when they learned information to reconstruct this information (Karpicke, Lehman, et al., 2014), and some amount of difficulty is ideal during this process.

- The important thing is to balance retrieval difficulty and success. You do not want the retrieval to be so difficult that students fail to retrieve anything at all, but you do not want it to be so easy that they do not really have to think back and reproduce the information. Teachers will likely need to monitor difficulty and success, and adjust retrieval activities accordingly.

- Teachers can also provide scaffolding to help their students achieve success initially, and then slowly make retrieval more difficult as the students become more comfortable with the material. Doing this has the added benefit of ensuring repeated retrieval, and continuing to retrieve information multiple times over a period of time is very beneficial to learning (Kapler et al., 2015).

When should retrieval practice take place?

- In terms of short-term learning, findings from studies suggest that interspersing quiz questions throughout learning can help with learning information presented later on in the class in comparison to not quizzing, because the quiz questions help relieve some of the interference that typically builds up during a longer learning session.

- Looking at long-term learning, in a set of three studies in the lab, online and in the classroom, Weinstein et al. (2016) did not find any differences between conditions when students were either quizzed throughout class or at the end of class. Importantly, students who were not quizzed at all did more poorly on the long-term learning tests. So, the take-home message is that it doesn't much matter where you put quiz questions, as long as you do give students retrieval practice opportunities in as many classes as possible.

Action research suggestions for retrieval practice

- Use past/sample paper exam Qs at the start, during and at the end of lessons – you could make use of whiteboards to quickly assess students and give feedback/use questioning to extend understanding or address misconceptions
- Construct multiple-choice, short answer questions or hybrid Qs to assess learning during the lesson and give feedback
- Use Google Forms to set multiple choice/short answer questions as homework or to give in lesson (if students use their phones sensibly!) – you can set it up so that these mark themselves and send the feedback to each student