

Retrieval Practice for Long Term Learning

Kate Barry

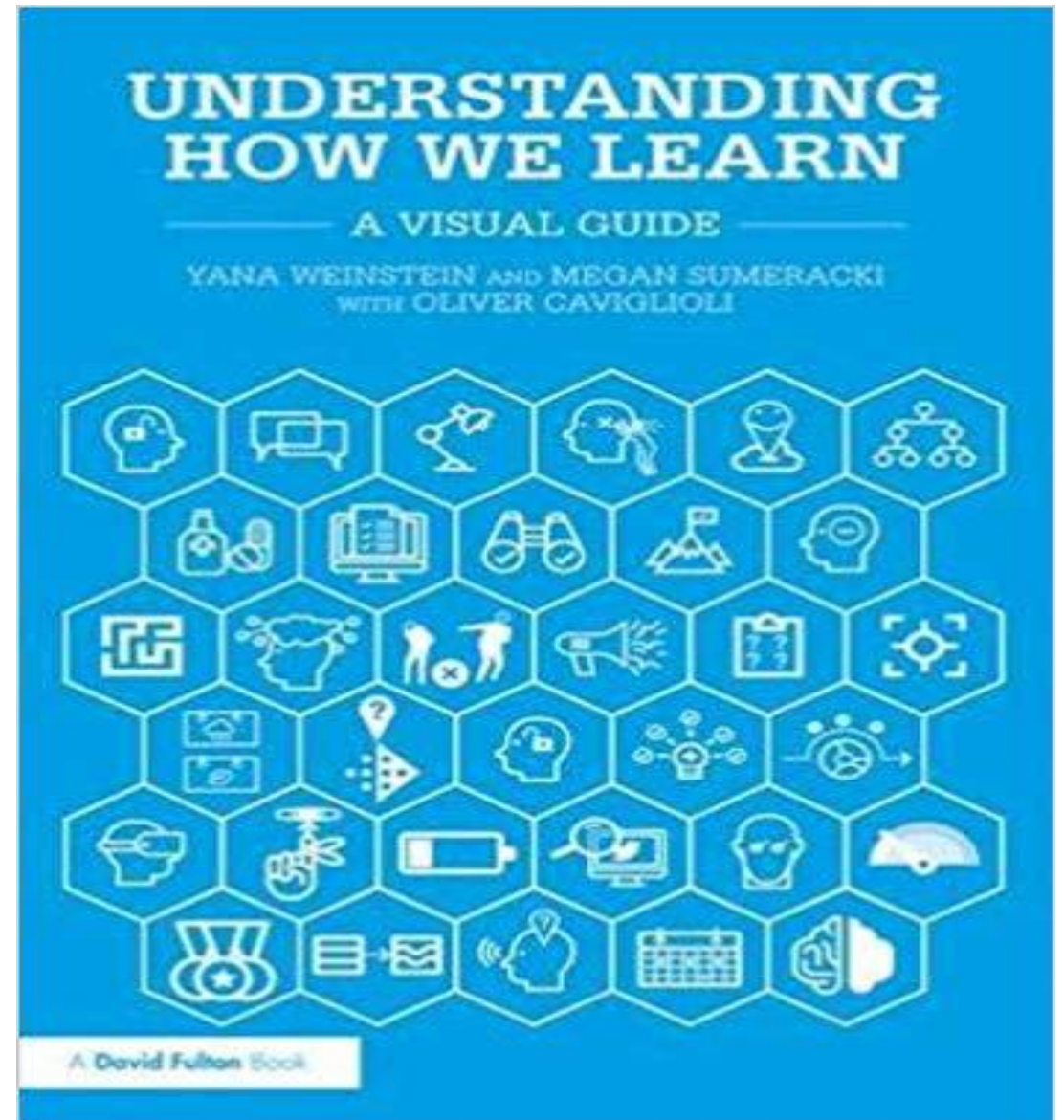
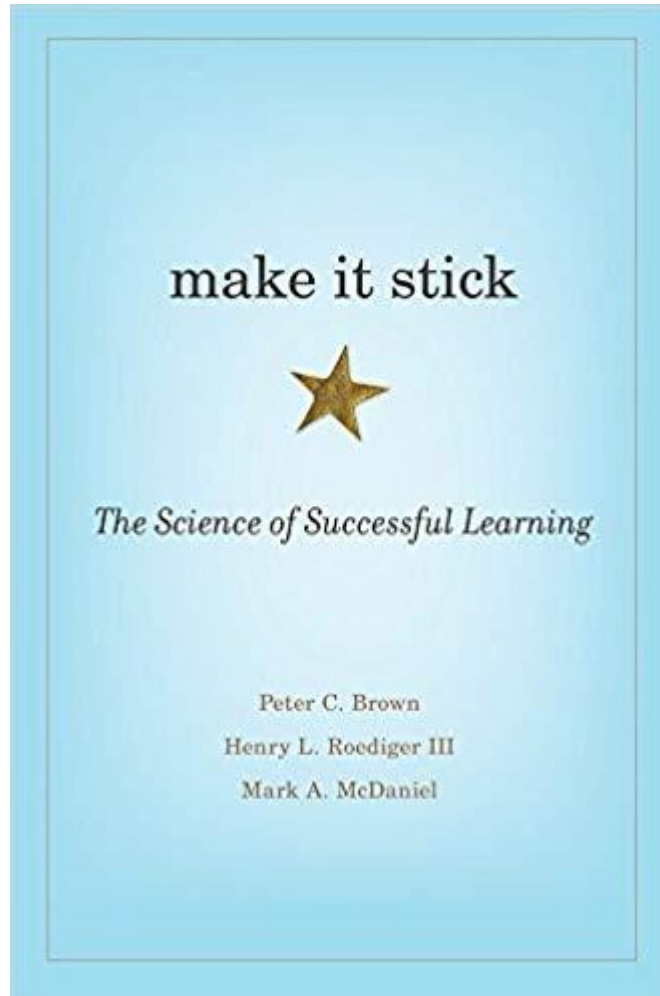
ResearchED Dublin 5th October 2019

What is retrieval practice?

“Retrieval practice involves reconstructing something you’ve learned in the past from memory, and thinking about it right now.” (Weinstein,

“Understanding How we Learn” 2019, p. 118)

Recommended reading



Stages of Memory

Encoding

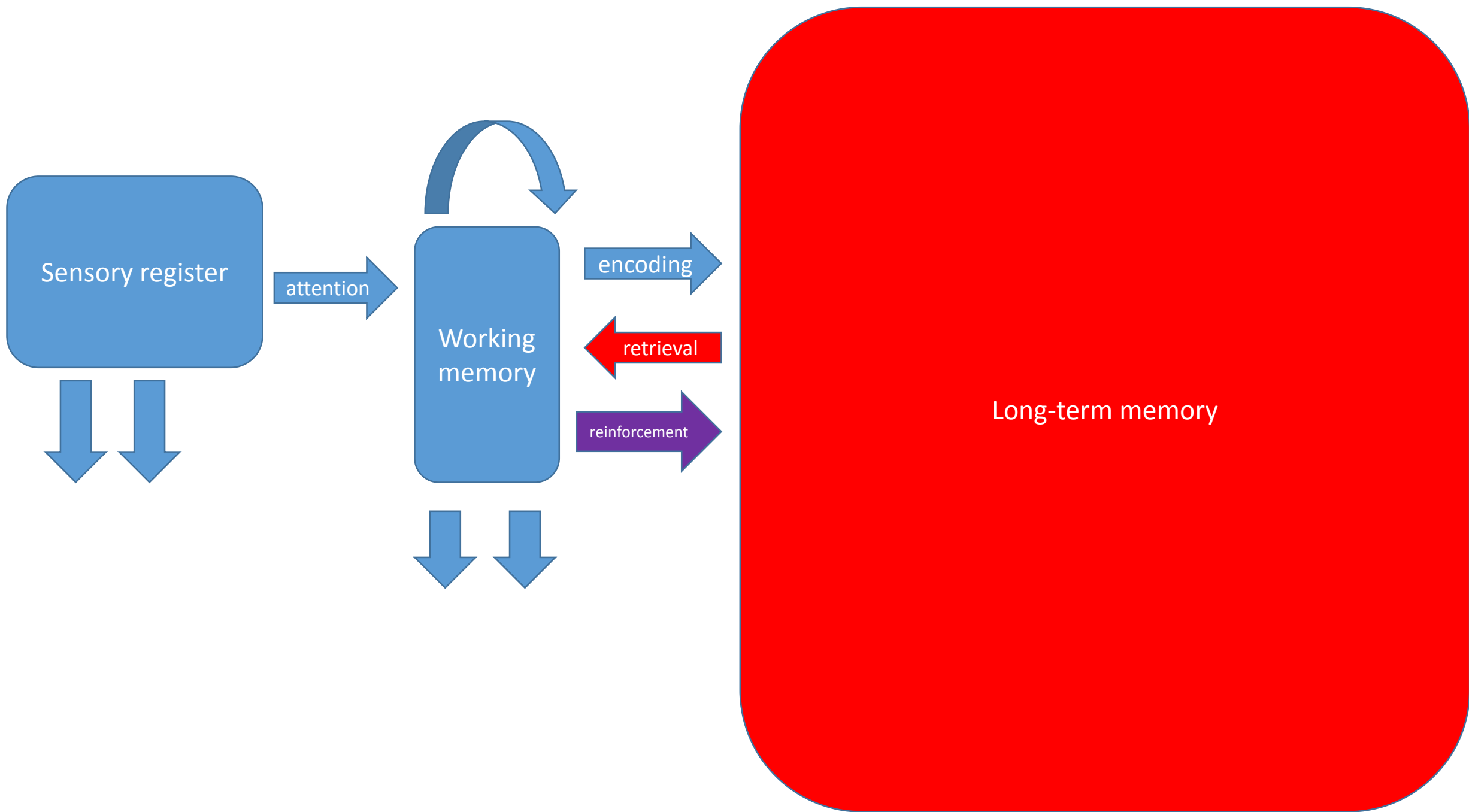


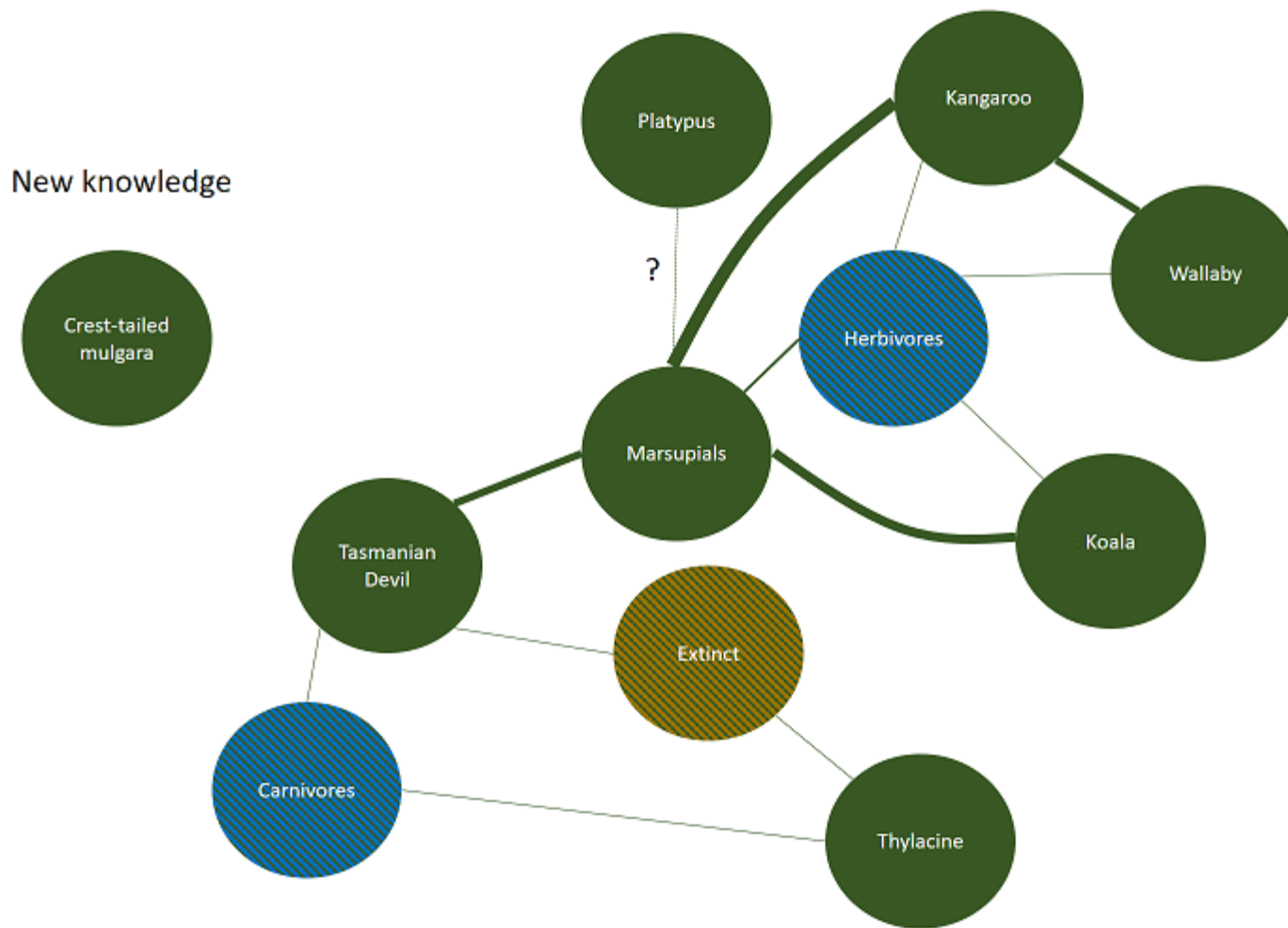
Storage



Retrieval







From “Filling the Pail” blog by Greg Ashman
<https://gregashman.wordpress.com/2019/08/08/the-implications-of-schema/>

Forgetting or retrieval failure?



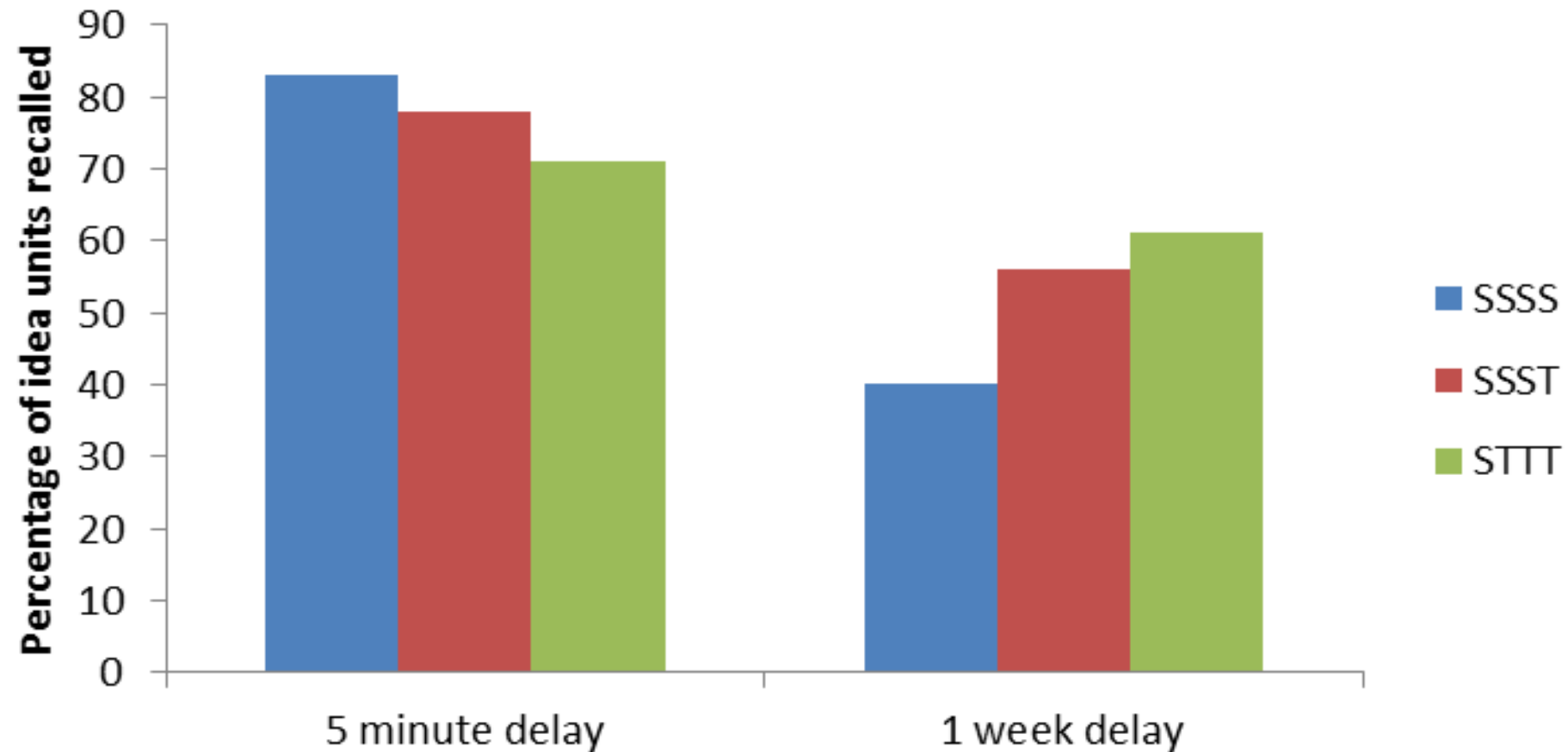
The testing effect

“Research has found that even at the secondary level, classes that had weekly quizzes scored better on final exams than did classes with only one or two quizzes during the term. These reviews and tests provided the additional practice students needed to become skilled, successful performers who could apply their knowledge and skill in new areas. ...material that is not adequately practised and reviewed is easily forgotten.” (Rosenshine, “Principles of Instruction” 2012, p. 20)



Roediger and Karpicke (2006)

Figure 2. Effects of repeated studying versus repeated retrieval practice. Derived from Roediger and Karpicke, 2006.



“when we bring information to mind from memory, we are changing that memory, and research suggests we are making the memory both more durable and more flexible for future use.” (Weinstein, 2019, p. 119)

Active Retrieval Promotes Meaningful Learning (Karpicke, 2012)

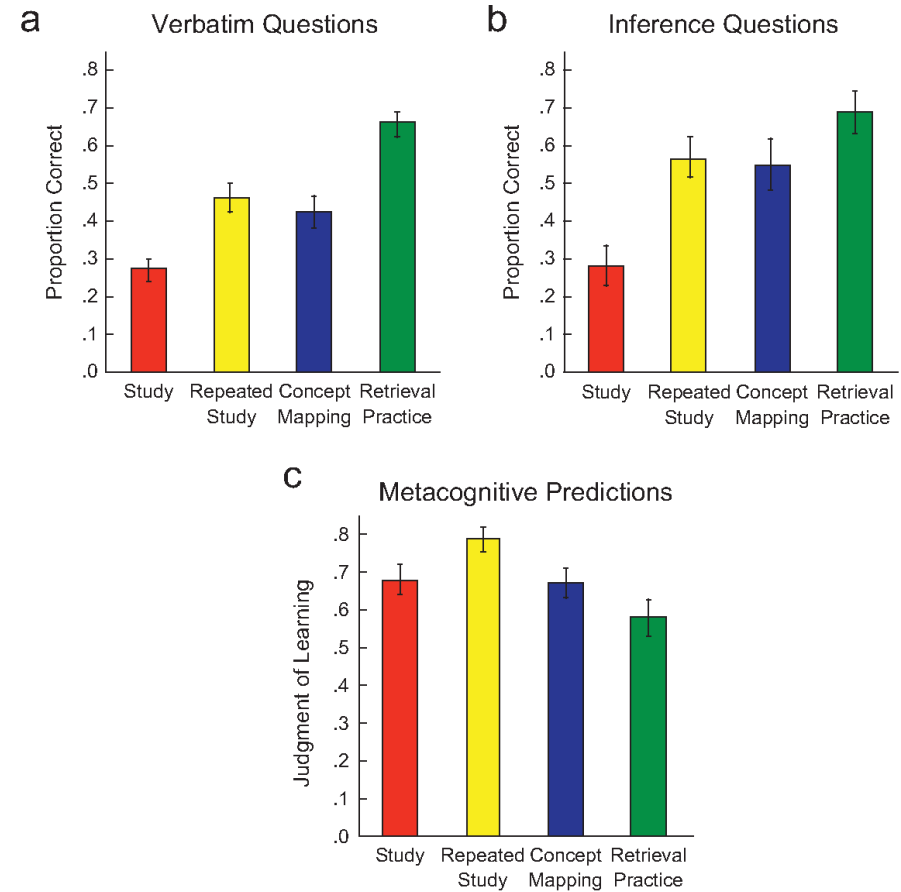
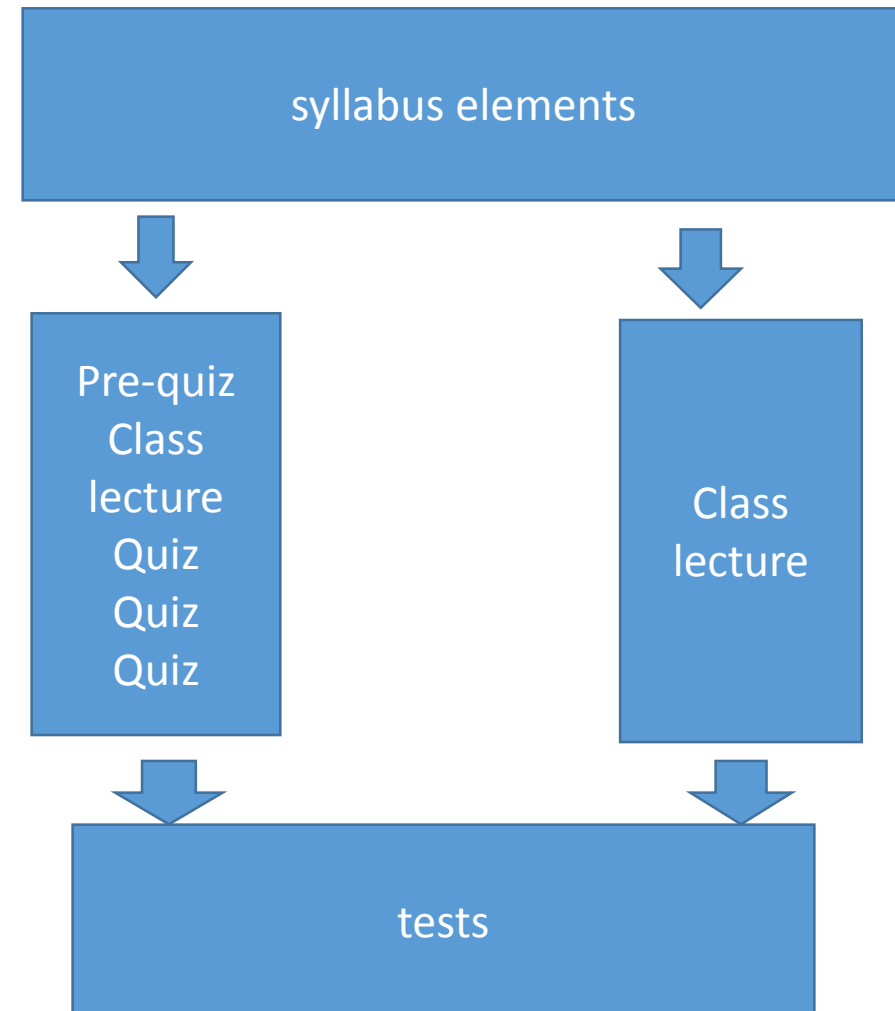


Fig. 3. Proportion correct on final short-answer verbatim questions (a) and inference questions (b) 1 week after learning.

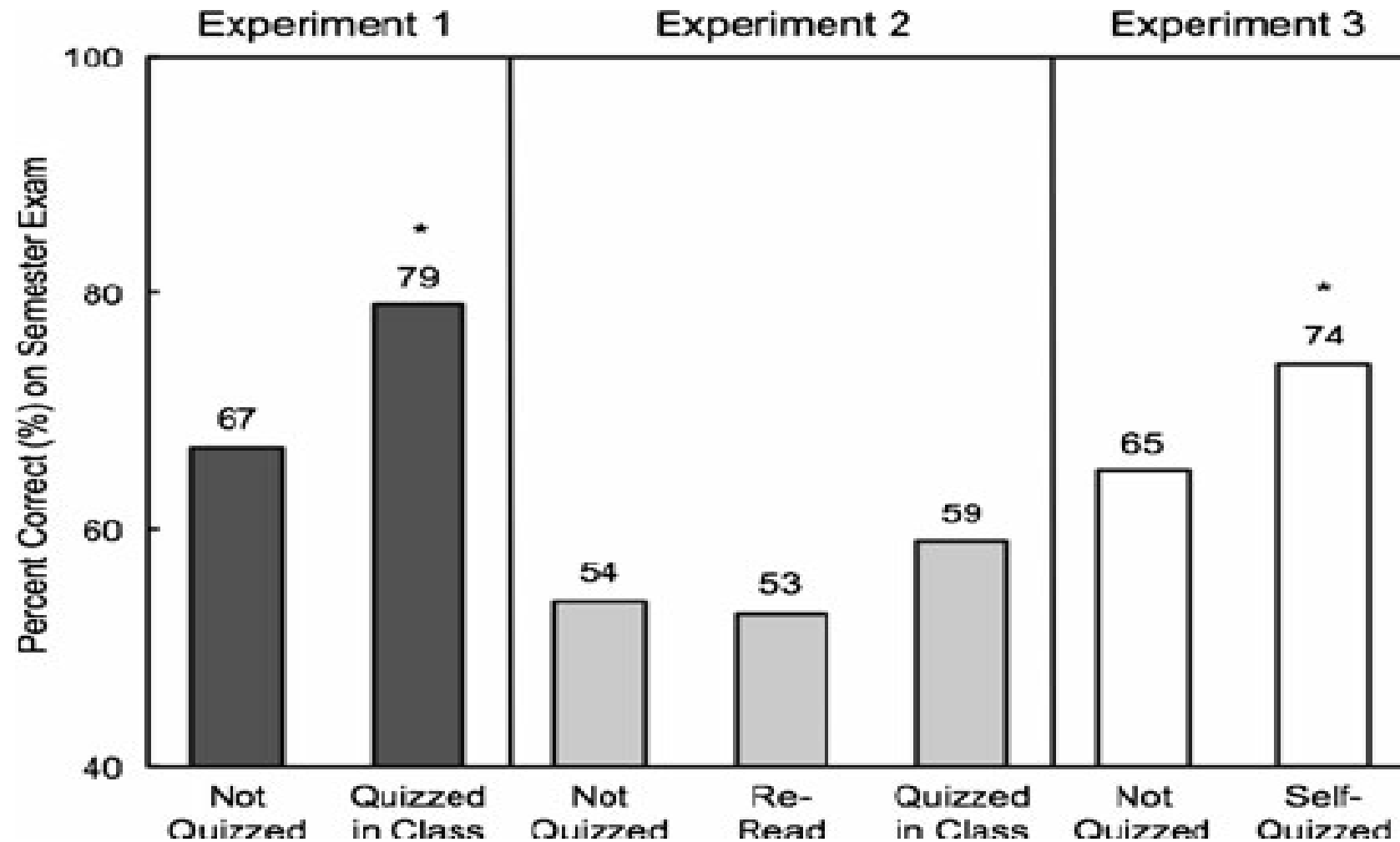




Columbia Middle School, Illinois
5 years
1,400 students
subjects included history and science
“retention was better for quizzed material than for non-quizzed material”. This effect was found regardless of whether the final test format matched the retrieval practice format. Students were also surveyed and the study found appreciation for the strategy and a reported decrease in test anxiety.



McDaniel, Roediger, Huelser Agarwal 2011



Feedback after quizzing improved students' *low confidence correct responses*.

Butler et al (2008), Agarwal et al (2009) in Agarwal et al (2012)

Some Types of Retrieval Practice

Questioning – turn and talk

Do-Now (DNA)

Question generation

Self-quizzing – flashcards?

“Brain dumps”

Tests/Quizzes

House exams

“Any activity that requires students to bring information to mind from memory is a retrieval-based learning activity” (Weinstein, 2019 p.142)

turn and talk

é

- called an “aigu” or acute accent
- only ever over “e”
- looks and acts like a *fada*
- makes the sound longer
- right-hand angle is less than 90°

Apostrophes

1. Whos the partys candidate for Mayor?
2. The mans car is old and its about to fall apart.
3. Its important that the kitten eats all its food.
4. She did not hear the childrens cries.
5. Didnt he say hed arrive at three oclock?

Apostrophes Corrected

1. **Who's** the **party's** candidate for Mayor?
2. The **man's** car is old and **it's** about to fall apart.
3. **It's** important that the kitten eats all its food.
4. She did not hear the **children's** cries.
5. **Didn't** he say **he'd** arrive at three **o'clock**?

Don Pedro's Plan "Much Ado About Nothing"

1. Don Pedro announces "Cupid is no longer an archer, his g_____ s_____ b__ o_____, f____ w____ a____ the only l____-g_____."
2. Why is he comparing himself and his companions to Cupid?
3. Which three characters will trick Benedick into believing Beatrice is in love with him?
4. Which character is in charge of playing a similar trick on Beatrice?

The wedding scene

1. Name the priest who is to celebrate the wedding of Hero and Claudio.
2. Define the word “impediment”.
3. Complete this line from Claudio “There, Leonato, take her back again/Give n__ t____ r____ o____ t__ y____ f_____”
4. Claudio compares Hero to two Roman goddesses: Diana and Venus. How does this offer two contrasting opinions of Hero?
5. Leonato is enraged. He asks “Hath no man’s d_____ h_____ a p_____ f_____ m_?”

Mention one metal used by the Celts to make tools.	Give an example of a secondary source	In medieval times what was jousting?	Name two important Celtic festivals.	Give three methods used by archaeologists to date objects.
Give three examples of tools used on an archaeological dig.	Name two stages in the training of a knight.	What do historians mean by the term Prehistory/ Prehistoric?	What do the letters BCE stand for?	What was a crannog?
Who were the first people to build castles in Ireland?	What was the Aos Dána?	To what century does the date CE 1825 belong?	During the Middle Ages, what was the name of the area around Dublin controlled by the English?	What is meant by the term midden?

Revision Tiles

See Kate Jones @87History
<https://twitter.com/87History/status/1181596358651912192?s=20>

I am going to wear a dress this evening.

Comment dit-on en anglais?

Nous allons acheter un nouveau canapé.

Qu'est-ce que tu fais pour aider à la maison?

Comment dit-on?

-these shoes
-this belt
-this hoodie

Quelles sont les racines au futur simple de ces verbes?

-avoir
-aller
-faire

Le Québec est une région francophone de quel pays?

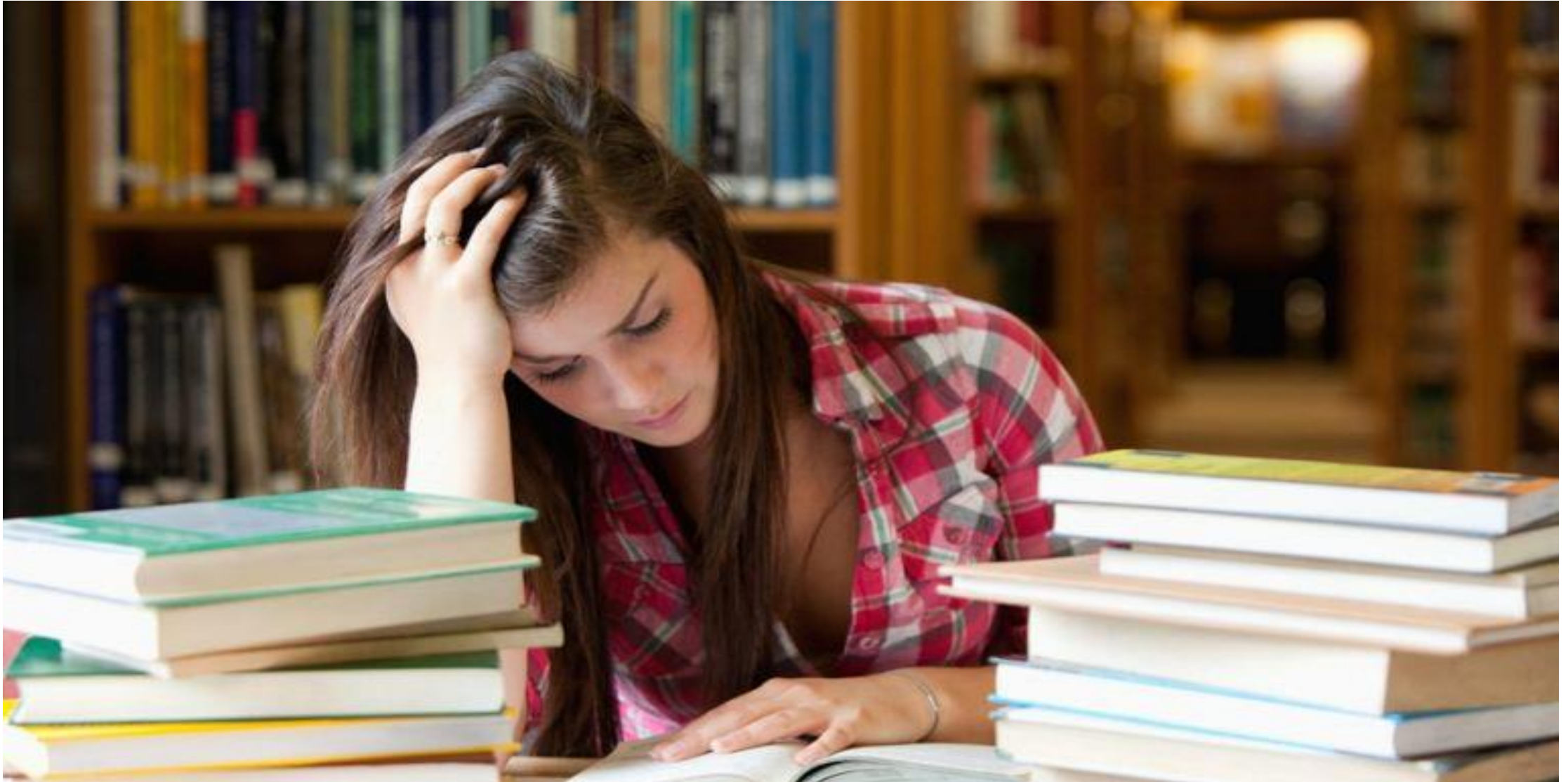
Question formulation

(“The Writing Revolution” by Natalie Wexler)

B. For each answer, write a suitable question. Use question words such as “Who/when/what/how/why/how many/where?”

	He escorts the man Jack to the gates. As they walk he alters the man Jack’s memory.
	She means that the dead should not be selfish, but instead should act to help others.
	He can see in the dark and the eyes of the living do not notice him.
	Caledonia
	It is colder than the other graves and in very poor condition.
	There is a brooch, a goblet and a knife.
	They steal the name of the first person they eat after becoming a ghoul.

What does studying look like?

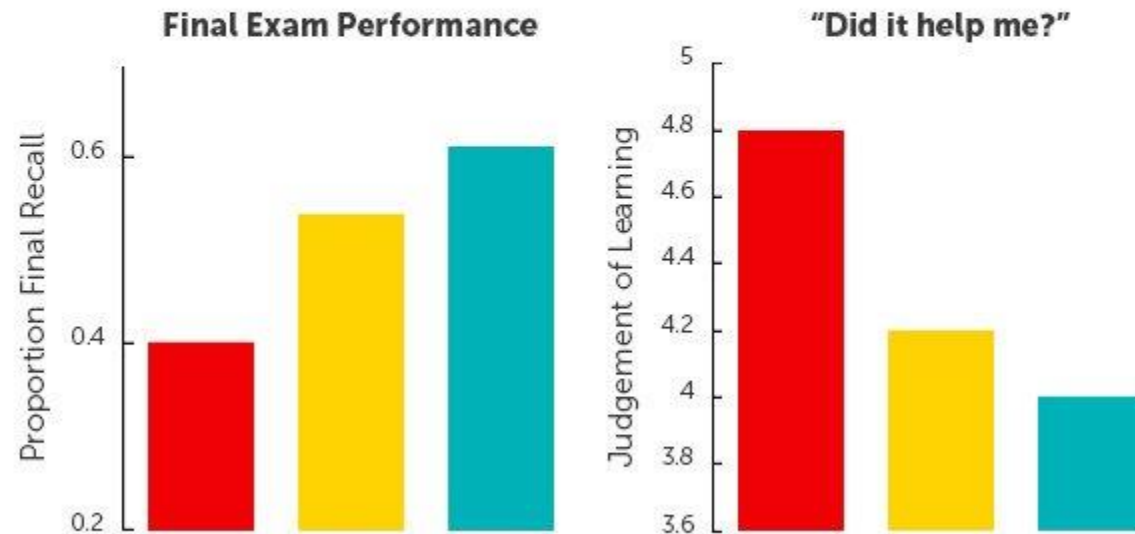


Re-Reading v Testing

Reading, reading
reading, reading

Reading, reading
reading, testing

Reading, testing,
testing, testing



Source: Roediger and Karpicke (2006)

innerdrive.co.uk

Why the resistance?

The paradox of desirable difficulties

“techniques that may promote rapid initial learning will often lead to poor long-term retention and likewise, techniques that make initial reading slower or more effortful often enhance long-term retention” (Karpicke, 2007)

“learners will study material until the benefits of studying *are perceived no more*” (Soderstrom, 2014, p. 101) [italics mine] Illusion of competence.

Student survey 2-3 years after introducing self-quizzing as homework.

“Writing down the English words/phrases and testing myself to see if I can translate those words/phrases into French” (2)

I do a mini test at the end and see if I know everything. If I don't then I go back over what I don't know. I keep doing this until I get everything right” (2)

“I go over all the verbs and I do self-quizzing “ (3)

“I write down what I remember from the topic and then I read over it and correct my mistakes. I also answer exam paper questions and listen to tapes”. (3)

Self-quizzing for homework

1	À l'école, j'écris avec un stylo.	In class, I write with a biro.
2	Je n'utilise jamais du « Tippex »	I use never of the Tippex
3	parce que je n'en ai pas besoin.	because I don't have need of it.
4	J'adore mon prof de français !	I love my teacher of French!
5	Elle est carrément sympa	She is squarely nice
6	bien qu'elle nous donne beaucoup de devoirs.	even though she us gives a lot of homeworks.
7	Ma matière préférée, c'est le français.	My subject preferred, it's the French.
8	Je l'adore parce que c'est facile.	I it love because it's easy.
9	Par contre, je trouve le japonais plutôt difficile.	On the other hand, I find the Japanese rather difficult.
10	Beaucoup de gens disent que	A lot of people say that
11	c'est très utile d'apprendre une langue étrangère.	it's very useful to learn a language foreign.
12	Moi, j'apprends le français et l'allemand aussi.	Me, I learn the French and the German also.

“A curious peculiarity of our memory is that things are impressed better by active than by passive repetition. I mean that in learning (by heart, for example), when we almost know the piece, it pays better to wait and recollect by an effort from within, than to look at the book again. If we recover the words in the former way, we shall probably know them the next time; if in the latter way, we shall very likely need the book once more.” (James, William in Roediger, 2011, p.2)