But now we know…

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TESOL Spain 2019

Over the last few decades there has been an immense amount of research done and advances made into understanding how our brains work, and – of exceptional interest to teachers – how we learn. Yet a lot of it never makes it across from the laboratory to the classroom, from academia to the world of day-to-day education.

To bring all of the useful findings together would be an entire course in brain-friendly learning (watch this space…!) but some interesting areas are:

- Did you know that interrupted things are more memorable than completed things? The human brain longs for completion, for closure, to be able to file things away and – if not needed immediately – to then mark them for deletion.
    - Exploit this by: leaving the final stages of activities for the students to find and check online later; by leaving a story or progression of a project at a critical moment and coming back to it *…in next week's episode!* (TV series makers have known this for decades); cutting short the time available for completing a group project…. BUT do make sure that there is the option of coming back to it later or something fun to come next – you don't want your students to hate you!

- Talking of coming back to things later… Did you know that allowing time to forget is a powerful tool for aiding learning? It has to do with the theory of *desirable difficulty* as defined by Robert and Elizabeth Bjork in 1994. Effortful remembering of something half-forgotten fixes information better in the brain than revisiting something frequently again and again. *Spaced interval learning/study* allows us to study less and remember better, by testing our memories and forcing us to search for answers.
    - Exploit this by: unannounced spot tests (not tests that count for a final mark, that would be unfair – fun, but unfair) – make them quick and interactive and allow instant feedback where the students get to check their own answers; help students by providing a revision schedule where they have longer intervals to allow a little forgetting before a test – e.g. the test is in a month? Study now, in three days, after another ten days and then the day before the test – longer periods each time to allow a little forgetting to take place.

- Talking of testing… the theory that 'a test is not a learning tool' is disintegrating. It can be a very effective tool if: students are encouraged to self-test for revision; quick tests are used to raise awareness at the outset and see what students already know; as mentioned above, spot tests are used to jerk memory into action.
    - Exploit this by: using a test-teach-test approach (or even better a test, discover, interrupt, recycle, remember and then test again approach!); setting goals for lessons or blocks or lessons – ask students at the end to say what they achieved and if and how they met the goals. Mix it up.

- Talking of mixing it up… Did you know that *blocked practice* (repeating things over and over and over again) does not usually lead to effective learning? The motto is that you should *practise like you play, so you can play like you practise* – and no one (apart from factory workers or fast food servers) does the same thing over and over and over again in real life. *Interleaving* is the key – mixing it up. Interleaving your practice of one thing with revision of another and alongside

something completely new before cycling back to the one you're hoping to embed in the students' brains. That's the way we do life: an endless variety of tasks, problems, thinking, relaxation and emotions, all of which draw upon each other and feed into each other. One thing does not become more memorable by being placed alongside itself, but by being placed alongside many others with which connections can be made (*elaborative encoding*).

- Exploit this by: mixing it up! In an exercise which purports to practise present perfect, drop in some conditionals or imperatives or spelling mistakes or functional phrases; make practice contextualised and allow it to circle back to the target language now and again; don't worry if your students don't 'get it' now – as it fits into the larger scheme of things they will get it eventually, and better than if we hammer away at the present perfect until we all sick of it!

- But: don't mistake *multi-tracking* (having several ongoing projects or ideas of aims) with *multitasking* (the myth that certain people can do various things simultaneously). The truth is that **no one multitasks** (not even women!) – we all do one thing, switch, pick up on another, break, switch back, pick up on the first, remember where we were and start up again. Huge waste of time and effort and brainpower. This is especially for the teens who believe that they can study while texting, being on Snapchat, queueing up a playlist of YouTube songs and listening to a running commentary of the Sporting-Benfica match. The brain may be evolving so that some people are getting quicker and switching between tasks and picking up where they left off more efficiently, but there's still a googol's worth of time being wasted in between – about 50% of time (conservative estimate…!).

  - Bypass this by: encouraging students to use their side interests as regular reward, rather than constant distraction (you can do this in class – award to sessions of 5 minutes' mobile phone time in a 90-minute class); showing students how they lose time by switching: have them write on one line *I am an efficient multitasker and I lose no time* and then on the line below the numbers 1-10 and time themselves. THEN have them repeat the task on the two lines and time it again BUT this time switch between the two lines after each word/number and write *I* – 1 – *am* – 2 – *an* – 3 – *efficient* – 4 - … etc. Compare the two – convinced?

Probably not. They're teenagers – they're moving into Kieran Egan's 'philosophical layer' which basically means they think they know it all already and there's nothing anyone can tell them… But if you interrupt the practice before the final phase and get them to do it later at home, if you space out the repetitions of the task so they have to make an effort to remember how it works and what the results were each time, if you interleave the task with others and build in desirable difficulty (make the sentence and number string longer each time!) … then they should have a better chance of remembering what an incredible pain in the ass you can be!

And they might just build up some good study habits.

Bibliography

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