

13 Neuroscience-Based Tips for Teaching Vocabulary

Part One: Tips 1-8

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Introduction



The experienced English language instructor will tell you that there is a fine art to teaching vocabulary. Helping English language learners (ELLs) acquire new words, phrases, and idioms is also one of the most gratifying and exciting experiences a teacher can have. However, in my 25 years as an English language teacher (ELT), I have seen some critical mistakes made in vocabulary pedagogy, and these shortcomings can frustrate both the teacher and the students.

The purpose, then, of this two-part series is to offer neuroscience-based practices for vocabulary pedagogy that I have tested over decades in the classroom. The justification for highlighting these 13 teaching tips is based on the following:

- 1) My students use these tools and successfully learn the meanings and nuances of the lexical items;
- 2) They successfully use the vocabulary in spoken and written English; and
- 3) These tools are developed from discoveries in educational neuroscience and cognitive psychology that show how the brain works most efficiently while encoding, learning, and using language.

In part one of this series, I will first present two tips that I view as “pre-teaching” brain boosters—that is, activities that prepare students to learn. Next, I will briefly discuss the four neuro-concepts that underlie the rest of the tips in this article. These neuro-concepts are *Personalization, Interest, Emotions, and Senses*, or “PIES.” Finally, I will present tips 3-8, leaving the remaining tips for the next issue.

Pre-Teaching Tips

Teaching Tip # 1: Exercise the Body and the Brain



I firmly believe it is extremely important to prepare our students’ brains before they start to encode new material. This idea of exercise’s benefits on learning dates back to Hippocrates and his insights regarding the positive effects of exercise and diet on the brain and the physical body (380BC/1931). I consequently start each lesson with a few minutes of physical exercise. I have found this simple routine to be one of the most significant tools for effective teaching and successful learning. My intuitive reasons for doing this are strongly supported by numerous studies in neuroscience (Ratey, 2010; Schmidt-Kassow et al., 2013; Winter et al., 2007). Research shows that exercise is essential because it causes the release of specific neurotransmitters that help students focus, learn, and retain new information.

All too often, ELTs start class and move right into the lesson. I think we forget that each mind is coming from a distinct environment and situation; that is, some students are sleepy, some are hungry, and others are worried. When the whole class stands for two to three minutes to do exercises, everyone sits down with an equal sense of balance and focus and with renewed attention and enthusiasm. In short, we need to prepare the vessels which will hold the vocabulary we teach. If students are not cognitively prepared to learn, chances are their retention will be minimal. For an example of a pre-class exercise, see my **YouTube** video at <https://www.youtube.com/watch?v=E65StVJTzVU>.

Teaching Tip # 2: Mindfulness & Meditation



Practicing mindfulness and short meditation sessions before teaching vocabulary is as important as doing physical exercises. How, you might ask, can I make this claim? My assertion is based on two things: (1) research on mindfulness and learning shows it helps in all the ways that physical exercise does (Davis & Hayes, 2012); and (2) my own students claim it helps them focus and relax.

With respect to the research, both physical activity and mindfulness reduce stress, enhance attention and focus, and create a positive environment for learning new information, which, in our case, is vocabulary. For a short example of one activity I do, see Randolph (2019, para. 6).

Vocabulary Teaching Tips

Background: Personalization, Interest, Emotions, and Senses (PIES)



Research in educational neuroscience consistently shows that personalizing the material or task (Willis; 2006), creating an interest in the subject (Immordino-Yang, 2016), eliciting the emotions and connecting them to learning (Ratey, 2002), and employing the senses (Medina, 2009) are effective ways to help learners acquire the material and have fun in the process. This combination of neuroscience-based components is what I call the delicious PIES of learning—*Personalization, Interest, Emotions, and Senses*. As I go through the remaining tips for teaching vocabulary, I think you will see how these elements play such central roles in learning, and hopefully this will encourage you to employ these in your lessons.

Teaching Tip # 3: Personalize Learning

Whatever we teach, in order for it to resonate, we need to personalize it and connect it to our ELLs' lives. Teaching vocabulary is the perfect subject to harness this connection, because we can use our students' histories, experiences, and personhoods to teach lexical items. According to Willis (2006), the more a student personalizes the material, the stronger the memories they can forge regarding the content. The following two teaching tips show just how this can be done. When students define the terms and create examples, they immediately personalize the vocabulary terms and internalize them more quickly.

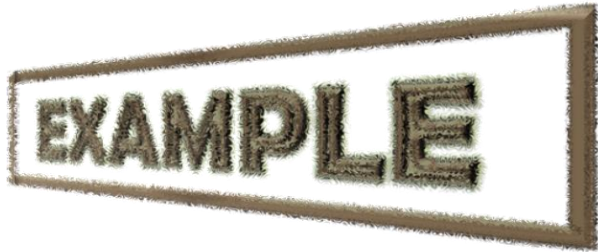
Teaching Tip # 4: Let Your Students Define the Vocabulary

One of the most frequent practices I see teachers engaging in—seasoned and novice instructors alike—is feeding the definitions of lexical items to their students. Teachers often either give the definitions orally in class or have their students find the definitions online or use a hard copy dictionary. Research suggests that this approach should be avoided when possible (Willis, 2006).

Teaching tip #4 suggests that teachers create a number of example sentences and then encourage the students to guess the meaning from the content of those sentences. I usually offer two to three written samples on the board. If the students need more, I give an additional two to three spoken examples. The beauty of this approach is that the students create the definitions on their own. There are times, of course, when I need to correct their definitions or add a point or two, but most of the time theirs are correct. In a sense, the student versions of the definitions are naturally paraphrased versions of the dictionary's definitions. For example, regarding the idiom, *come up with*, the general dictionary entry says "think up an idea." A common student version is

“create or make up an idea or plan.” The two aforementioned definitions are essentially synonymous. In addition, because the students are formulating the definitions, they take immediate ownership of the terms, and this ownership then translates as a special kind of “language pride.” That is, each lexical item is now owned intrinsically by the students, and this develops into deeply rooted feelings for the terms and helps the students use them correctly.

Teaching Tip # 5: Examples, Examples, Examples!



LeDoux (2003), a neuroscientist specializing in neural connections and emotions, poetically suggests that “[p]eople don’t come preassembled, but are glued together by life” (p. 3). LeDoux emphasizes that each human being starts with a particular genetic disposition and then develops their life and personality via numerous experiences. Based on LeDoux’s idea, I have found it is extremely important to use our students’ unique qualities and experiences, and tie them in with the examples that illustrate the lexical items. This helps explain the terms in a concrete way, and it helps our students remember them with interest and ease.

Teacher-generated examples can focus on (when appropriate) the students’ histories, personhoods, personalities, and experiences. For example, if you are studying the term, *creative*, and you have a poetic student in your class, then the example to help explain the term could be: “Kitana uses her *creative* ideas to write poetry.” The class will understand the term through the student’s gift for creativity and poetry. The word, *creative*, will be linked in the students’ minds with Kitana’s unique trait, and that will make it all the more powerful.

I also encourage students to use their classmates when it helps explain or define a term. I once had a very “meticulous” student from Oman. A number of students used her in their written examples. These students claimed it helped them learn the term, and my “meticulous student” was proud that her personality was looked at in a positive light. The entire class benefitted from this experience.

Teaching Tip # 6: Make Teaching Vocabulary a Habit

Another common myth I often hear is the claim, “My students don’t need to study vocabulary during class; they’ll pick it up naturally on their own. Besides, we don’t have time in class.” Picking up vocabulary on one’s own is not necessarily an easy task. There is a great deal involved. Does the average ELL have a method for this? Do they necessarily know what words are important? Will they use them correctly once they learn the meanings?

Vocabulary needs to be taught frequently and explicitly in class, and this includes teaching the ELLs methods that they can use to learn on their own. Knowing a word requires a very in-depth understanding of its definition/s, part/s of speech, its register (formal or informal use), its use in spoken and written English, its collocations (if any), its connotations, its nuances, and even its linguistic relatives—synonyms and antonyms. Learning all the above at once is ineffective (as we will see below), but a good instructor will cover all of these at some point during the semester, whether it be in class or as homework. In short, vocabulary must be taught explicitly, and it must be a daily or weekly ritual in class.

Teaching Tip # 7: Focus—A Little Goes a Long Way

The brain encodes and learns information most efficiently when it focuses on one point or one task and then moves on to the next (Medina, 2009). Despite what popular culture or, in some cases, popular science told us in the 1990s, the efficacy of multitasking is a fantasy, and, in

many cases, it can actually cause problems in learning because the brain, particularly the hippocampus (where a great deal of learning and memory formations take place), is stressed and consequently is less able to focus (Horstman, 2009).

This is why I never teach multiple definitions of a lexical item when I introduce it to the students. I focus on one definition per term. If a term has more than one definition, then I address it in the next class or when it is appropriate. For example, “come up with” means *to create an idea*, but it also means *to produce a certain sum of money*. So, I would most likely teach the first definition during the initial class and then address the second definition during a unit that deals with money or banking.

The same is true for teaching synonyms and antonyms of a specific term. I first teach the definition of the term and then make sure the students are comfortable with using it. Once they are comfortable with the term’s use, I will address some of its synonyms and antonyms. There are, of course, exceptions. For example, “be on top of the world” and “down in the dumps” are two that might be taught together because their visual, emotional, and locational meanings are very different, and thus easier to learn and retain. However, as a general rule of thumb, it is best to focus on one term and one definition. It is also best to study one to two terms at one time versus giving the students a whole list (Bennett, 2019). Again, a little goes a long way.

Teaching Tip # 8: Repetition is Memory’s Best Friend



According to Medina (2009), “[m]emory may not be fixed at the moment of learning, but repetition, doled out in specifically timed intervals, is the fixative” (p. 130). The frequent repetition of a newly learned lexical item is natural, as that is the way we acquired new vocabulary in our native language as young children. We heard words, phrases, and idioms multiple times at home and at school.

I have found the use of repetition at certain intervals during class to be a key factor in breaking what I call the “Ebbinghaus Curse.” In 1885, Ebbinghaus discovered that we typically forget 90% of the information we are exposed to within 30 days (1885/1913). However, by employing creative kinds of repetition of the terms during class and in my students’ homework via my *Head-to-Toe Method of Associations for Vocabulary Acquisition*, I have reversed those numbers, and my students actually retain over 93% to 95% of the lexical items after 90 days!

The current research shows that a student must be exposed to a lexical item 17 times during a six-day period in order for that item to be forged in his/her long-term memory (Bennett, 2019). Perhaps the reason why my method works so well is because students are exposed to each

term about 15 to 20 times during a one-hour class. These multiple exposures might seem daunting, but if you follow my suggestions of providing examples and having students elicit the definitions from these and volunteer their own examples, the repetitions build quickly and in a very effective way. In sum, using repetition is a natural, necessary, and nifty way to acquire lexical items.



Concluding Remarks

An artful and informed approach to teaching vocabulary helps ELLs acquire lexical items as well as gain insights into the target language and their host culture. The eight teaching tips that I have described in Part 1 help teachers and students to make the most of their time learning vocabulary in class. These ideas, based on my own teaching and learning experiences and discoveries in neuroscience, are fundamental and natural ways to help students learn English in a similar manner as they learned their first language. By employing physical exercises and mindfulness (two tools almost all children use; they are simply unaware of how it helps) and involving the students in the learning process, by personalizing the definitions and examples, by explicitly teaching vocabulary with a special focus, and by repeating the terms at intervals, teachers can help their students to engage in beneficial habits in the classroom and thus ultimately inspire their students to take those habits with them as they learn to acquire vocabulary on their own.

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You can check out Patrick's **YOUTUBE** channel at

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A special anti-plagiarism video is available here:

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