BRAIN TRAINING FOR LEARNING VOCABULARY TO ENHANCE LANGUAGE COMPETENCIES IN THE STUDENTS OF MECHANICAL ENGINEERING

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ABSTRACT

Nowadays, English language education has been sharpening on learning styles. Nevertheless, in spite of the number of practice books, articles and websites, particularly there is no reasonable proof for the presence of the learning styles. Additionally, if does anyone agree that it is the brain that acquires, there should be pointers in the brain for the presence of learning styles, practically. In this paper, the consistency and strength of tests assessing learning styles are examined. However, this paper does not aim to merely target this problem; it is broader in scope, in that it will also deal with problems in general that surface on account of inefficient techniques used by learners when tackling their issues with vocabulary. Far ahead, succeeding the fundamentals of trail evidence, it is specified that the normal manner of the brain to acquire words happens by gathering numerous receptive experiences.

KEYWORDS: Learning styles, practice books, articles and websites, reasonable proof, pointers in the brain, consistency and strength, inefficient techniques, issues with vocabulary, trail evidence and high performance.

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1. THE WRITTEN LEXICON

For a few, it is the correct and appropriate use; for others, it is a recall or even both. As with the majority of problems, one must first look at the root of the issue and think where it derives from in an attempt to come up with the best solution possible.

First language (L1) interference is usually referred to as the origin of various inaccuracies – lexical inaccuracies not being an exception. The fact that students inclined to record vocabulary using direct translation simply adds insult to injury in an already dreadful situation. This is demonstrated in five different languages using the word *afraid*:

<table>
<thead>
<tr>
<th>Afraid (adj.)</th>
<th>Translation</th>
<th>Language</th>
<th>Part of Speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miedo</td>
<td>Spanish</td>
<td>Noun</td>
<td></td>
</tr>
<tr>
<td>Medo</td>
<td>Portuguese</td>
<td>Noun</td>
<td></td>
</tr>
<tr>
<td>Peur</td>
<td>French</td>
<td>Noun</td>
<td></td>
</tr>
<tr>
<td>Paura</td>
<td>Italian</td>
<td>Noun</td>
<td></td>
</tr>
<tr>
<td>Angst</td>
<td>German</td>
<td>Noun</td>
<td></td>
</tr>
</tbody>
</table>

In the course of translation, words change and mutate to such an extent that sometimes even the word type changes, as can be seen above. At this juncture, with this information, a learner is expected to recognise a word, understand it within the context and know the spelling – and this is precisely where it all stops.

Memorizing lexis in such a fashion, no indication is given as to any of the words’ collocations, derivations, connotations, idiomatic meanings, pronunciation, usage, synonyms or frequency. This is thus left to the student’s imagination. In turn, this normally results in the student using the word in English in exactly the way that it is used in their native language through direct translation, as is demonstrated below:

<table>
<thead>
<tr>
<th>Yo</th>
<th>Tengo</th>
<th>miedo</th>
<th>de las</th>
<th>arañas</th>
</tr>
</thead>
<tbody>
<tr>
<td>J’</td>
<td>Ai</td>
<td>peur</td>
<td>des</td>
<td>araignées</td>
</tr>
<tr>
<td>Io</td>
<td>Ho</td>
<td>paura</td>
<td>dei</td>
<td>ragni</td>
</tr>
<tr>
<td>Ich</td>
<td>habe</td>
<td>Angst</td>
<td>vor</td>
<td>Spinnen</td>
</tr>
<tr>
<td>Eu</td>
<td>Tenho</td>
<td>medo</td>
<td>de</td>
<td>aranhas</td>
</tr>
<tr>
<td>I</td>
<td>Have</td>
<td>afraid</td>
<td>of/since/by/from (the)</td>
<td>spiders</td>
</tr>
</tbody>
</table>

The example above exemplifies just a sample of the plethora of problems that inappropriate compilation of a written lexicon can cause as a result of the lack of information given about a word. To precise, knowing the meaning of a word does not mean one knows a word.

The difference in sentence structure, morphology and the general behaviour of words differs from language to language, in some cases more drastically than others. For monolinguals, this poses a more serious threat than for multilingual speakers. The fixed wiring of one’s brain in line with the rules of a single language makes for higher resistance to the acceptance of new, different or unfamiliar concepts. In point of fact, the lack of tolerance for these new concepts needs to be addressed as much as the new concept itself. Explicit demonstration and the raising of awareness of the difference play a major role in the long-term progress of the learner’s level of language. This can, in reality, be compared to stretching one’s muscles prior to undergoing tough exercise in order to avoid injury.
Brain Training for Learning Vocabulary to Enhance Language Competencies in the Students of Mechanical Engineering

2. THE MENTAL LEXICON
The mental lexicon is “a person’s mental store of words, their meaning and associations” (Richards and Schmidt, 2002: 327). Brown (2006: 37) linked it to the World Wide Web and Internet.

The total model for the place of any word in the lexicon will have to be three-dimensional, with phonological nets crossing orthographic ones and crisscrossing semantic and encyclopedic [personal knowledge] nets (McCarthy, 1990: 41).

To make it simple, the content in the mental lexicon is like a computer or library, which is always being updated. Words come, words go and words are forgotten. (ibid: 42)

3. METHODOLOGY
Learners’ opinions of their own memory range from a self-proclaimed photographic memory to that of a goldfish. What needs to be questioned is what a learner is doing so as to build up their psychological lexicon and, more importantly, how, as opposed to just being fortunate or unfortunate. As the title of this paper suggests, the brain can be trained in such a way as to improve retention and recall of lexis.

Through the theories behind the types of memory, the psychological lexicon, and why we forget, it is evident that a language teacher must ensure that their learners permanently retain what they have been taught in long-term memory. Here are some methods that can be used to help develop and facilitate an efficient retrieval system for learners of English.

Upon taking a look at a learner’s collection of written notes, it becomes more than clear that the notes and information from page to page are naturally organized in a chronological order, written in the order that the information was either presented to them or experienced by them. Let us imagine those two weeks ago, on Wednesday, the class had a lesson about politics. The simple question, “What did you do in class two weeks ago on Wednesday?” is usually countered with, “I can’t remember!” whereas the question, “Can you tell me about politics in your country?” will be complemented by a discussion using the language covered in the same lesson that was just referred to.

Another glimpse into the way memory works can be demonstrated with another similar exchange, by asking for the recall of lexis in two different ways:

i. Think of a word that begins with B…that is a vegetable
ii. Think of a vegetable that begins with B

When asked which of the two was carried out faster, or even more effortlessly, there is a general consensus that the latter option is the answer to both questions. This is due to the fact that the brain organises lexis into groups. The term ‘group’ is here used freely due to the fact that a group may be organised according to anything from sound to spelling, topic to personal experience, preference to fear.

In the case depicted above, the former instruction entails that the subject retrieves the group of words starting with a ‘B’ and sifts through that group to find a vegetable. The latter instruction entails that the subject retrieves a group of words that are all vegetables and sifts for one that begins with a ‘B’. To put it simply, it can be said that the ‘B’ group is much larger than the ‘vegetable’ group, and therefore requires more processing and brainwork in order to come up with the answer.

Another activity that can be done to express the presence of these groups is that of using lexical fields/sets, which can be compared to labelled boxes. If you ask someone what comes to mind when you tell them the contents of the box, they will tell you what that which is written on the label. Should you tell someone what is written on the label, they will tell you what is in the...
box. To exemplify, prompting someone with the words Euro, Pound, Dollar, Lira will provide you with ‘money’, whilst prompting them with the word ‘countries’ will provide you with a long list of countries.

The above points made with regard to both the written and psychological lexicon need to be directly demonstrated to learners of English. Learners need to be made aware of the differences, and other issues that contribute to the various difficulties one can experience when learning a new language. The context within which most of us teach is one where learners of a language are set in their ways, with particular reference to the pedagogical style that they have become used to through the mainstream scholastic system of their native country. This shift in teaching style and culture needs to be addressed from the beginning so as to set the foundations on which an individual may build upon in the most effective and efficient manner possible.

4. POSSIBLE SOLUTIONS

4.1. Reorganizing the psychological lexicon
Assigning meaningful tasks that resemble real-life situations, as well as creating a need for the learners to participate, will undoubtedly force learners to analyse and process language more thoroughly. This helps learners store words and their meanings to long-term memory. Rather than asking students to simply memorize a group of words, it is much more helpful to ask them, especially those of lower levels, to reorganize the words according to personal preference.

Considering a learner’s set of notes (the same ones mentioned in the section on the written lexicon earlier in this paper) and asking them to reorganise it according to their personal preference, in the way that they feel comfortable, in groups that they can relate to, can help with recall. The process of sifting through information and getting the learners to write out these groups indeed bridges the gap between the mental and written lexicon. This is achieved by making the written lexicon resemble, as much as possible, the psychological lexicon it is contributing towards.

The outcome is a collection of lexical sets, words, phrases, language points and other items, organized in such a way that the brain can relate to directly without the need for it to sort it out itself while you are asleep. As a matter of fact, it seems that this process helps the brain sort out the information in advance, thus allowing it more time to transfer the language learnt from the short-term memory slots to the long-term memory slots and create shorter, faster paths to the information within the brain itself, alleviating recall.

In other words, one can say that the process through which one goes to place the language into personalised groups is training the brain to be faster, stronger and better when using the said language items at hand. The process of sifting through the information, accepting the information into a group, rejecting an idea, ruling out an idea and simply attempting to fit an item into a group trains the brain and improves the reaction time related to language, leading to a higher level of automaticity. That is to say that the semantic processing involved in organising the groups of words, such as types of houses or food, helps learners organise the words in their own memory, thus making recall at a later stage much easier.

4.2. Prioritizing the Psychological Lexicon
An additional “trick” one can way out too so as to improve retention and recall of lexis is to prioritize information. In actual fact, studying and deciding what is and what is not important or personally relevant, further contributes to the amount of processing that goes on. Consciously prioritizing lexis with regard to what a learner might say is a very important or relevant word to them or what in their opinion are the easiest words, are but a few ways of getting the brain to refer to or even make use of the language in question, albeit mentally. A form of reverse
psychology may also be employed here: asking students to write down the lexical items that they feel they will never remember. More often than not, these items turn out to be the first items on the list of things that they remember.

The process of personalisation is the key to what helps with retention and recall. Needless to say, we tend to remember matters that we have a direct connection with, things that are personally relevant, especially those that we are highly opinionated about.

4.3. REUSE, RECYCLE
To help with the storage of words and their uses in different situations (style, register, and variety), recycling lexis is an obvious option. By carefully spacing out the use and reuse of lexis, certain problems inflicted on the retention of new lexis caused by other learning activities are in fact targeted. Bringing up a lexical item at a later stage and using it in a different context by giving different examples each time, can be exposed the learner to its different uses.

4.4. VISUALIZATION
Asking students to visualise lexis by getting them to draw a picture that “makes sense” using the words at hand is another, sometimes more engaging, the way of getting students to produce lexis. As with the previous recommendations, the end result is not what matters; what is fundamental is the process or journey that one embarks upon, in that it is what forces the brain to do its work. The process of thinking about what something looks like, whether it can connect to the other item you are thinking of, how you can draw it, what the relationship is between all of the items, and any other thoughts using the lexis at hand helps to establish connections in the brain, synapses, that will also allow for faster recall and better retention.

5. WHAT IS THE SCIENCE BEHIND THIS?
The strength of two connected neural pathways is thought to result in the storage of information, resulting in memory. This process of synaptic strengthening is known as long-term potentiation (Lynch, 2004).

An analogy that can be presented to understand the above is to think about the part of the brain that deals with memory as a large complex system of destinations all connected by roads of a different standard. Some are superfast highways or even Maglev train ways. A lot of time has been spent on these paths and the information found in those destinations is imperative, used frequently and therefore needs to be easy and quick to access. Other destinations are only visited occasionally and are connected by bumpy dirt roads, even a simple walking path that takes rather long to get to. When we discover a new destination that is crucial, we will travel along the path many times and realise that the destination is important and will, as a consequence, attempt to connect to it from various locations and gradually build a transport system that will support the amount of traffic that the roads will have to undertake.

Training the brain using the activities mentioned earlier is one way of improving the infrastructure that is the memory. By using target lexis over and over again, thinking about connections, relevance, and associations, the synapses are firing off with electric pulses and each time two are fired up at the same time, the connection is strengthened and that is what is said to improve retention.

6. CONCLUSION
At the end of the day what it all boils down to is hard work and perseverance. As with achieving any kind of results, be it for health and fitness, academic achievement, financial gain or improving one’s memory, motivation and willpower play a major role. There is no motivator better than success itself. The benefit of the activities above is that results are achieved immediately and that
these results are tangible and clearly evident. The sense of accomplishment, that Eureka moment, when you realize that something actually works, is what triggers the start of a chain reaction where success leads to achievement, which in turn leads to motivation, engagement, deeper learning, and more success, and the virtuous circle goes on.

REFERENCES

Books:

Journal Articles:
9. David Tomen, Best Nootropics for Learning and Memory. (Source)

Internet: