



Enhancing Memory in Second Language Acquisition Using Brain Based Learning Style

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Abstract

There are two kinds of languages that human learned in their life, the first language (L1) and the second language (L2). The first language is human's mother tongue, the language they first hear and acquire after they were born. While second language is the language that they learn after they have mastered their first language. Noticeably during the acquisition process of the second language, memory plays an important role. Memory is the process by which information is encoded, stored, and retrieved and it takes different forms. The biggest categories of memory are short-term memory (or working memory) and long-term memory, based on the amount of time the memory is stored. Working memory is commonly defined as a complement to long-term memory that allows for short-term activation of information while permitting the manipulation of the information in question (Shazia Ijaz M. Phil, 2014) [1]. All the components of the memory system need to be working in synchronization. The prime role of instructors is to help in maintaining and retrieving the language in their students' memory through strength of new connections, and by active usage of classified and organized information so that it gets stored in long term memory for easy retrieval. Because the elements which make up a memory reside in multiple cortical areas, the stronger the network linking the associated pieces together, the more resistant to forgetting it will be.

The human brain has an extensive repertoire of different types of memory strategies that are deployable for varying lengths of time on special occasions with distinctly different purposes and outcomes driven by multiple memory systems. The brain-based teaching strategies have proven to be effective for all students, regardless of their learning challenges (Renate & Geoffrey Caine, 2008) [2].

It is the purpose of this paper to make a theoretical investigation of the long term and short term memory processes and how it can contribute to the second language acquisition, through examining the expedient brain-based learning style, which would activate the memory to achieve target learning.

Keywords: memory, recalling, previous experiences, brain-based, teaching method, brain learn

1. Introduction

Language acquisition in humans enables them to perceive, produce and use words to understand and communicate. The natural order hypothesis of learning the first language has been applied to the second language according to Krashen's theory of language acquisition. Over the last few decades, researches into second language acquisition have explored the relationship between route and rate in developing the acquisition of a second language. This distinction is due to Ellis (1985) [3], route refers to the transitional stages that L2 learners go through in acquiring properties of the L2 (natural order hypothesis). While rate refers to the time it takes to pass through them. Though all learners go through the same stages in acquiring some L2 phenomena, certain individuals are faster at doing so than others.

Learning is the capability of modifying information already stored in memory based on new input or experiences and since memory is contingent upon prior learning, it occurs when our sensory systems send information to the brain (Kenneth Wesson2012) [4].

2. Short Term Memory (STM)

The term working memory (WM) is often used interchangeably with short-term memory (STM), although technically working memory refers more to the whole theoretical framework of structures and processes used for the temporary storage and manipulation of information, of which short-term memory is just one component. Short-term memory is supported by transient patterns of neuronal communication, dependent on regions of the frontal lobe (especially dorsolateral prefrontal cortex) which deal with the verbal and

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spatial working memory lateralized into the left and right hemisphere, respectively. The central executive controls two neural loops, one for visual data (which activates areas near the visual cortex of the brain and acts as a visual scratch pad), and one for language (the "phonological loop", which uses Broca's area as a kind of "inner voice" that repeats word sounds to keep them in mind). When something in short-term memory is forgotten, it means that a nerve impulse has merely ceased being transmitted through a particular neural network. In general, unless an impulse is reactivated, it stops flowing through a network after just few seconds. Information transferred from the short-term or working memory to the long-term memory within few seconds, although the exact mechanisms, by which this transfer takes place, and whether all or only some memories are retained permanently, remain controversial topics among experts. Atkinson and Shiffrin model of memory (2007) [5] assumes that the processes of moving information from the sensory store to short-term and then long-term memory takes place in discrete stages. The number of objects an average human can hold in working memory (known as memory span) is between 5 and 9 items which is sometimes referred to as Miller's Law[6], modern estimates claim 4 or 5 items. It is assumed that the short-term memory spontaneously decays over time, typically in the region of 10 to 15 seconds; however, it can be extended by repetition or rehearsal.

3. Long Term Memory (LTM)

Long-term memory (LTM), on the other hand, is maintained by more stable and permanent changes in neural connections widely spread throughout the brain (Brooks, B. M., Gardiner, J. M.1994) [7]. Short-term memory is a necessary step toward the next stage of retention, long-term memory. By contrast, long-term memory can store much larger quantities of information for potentially unlimited duration, its capacity is immeasurable. The transfer of information to long-term memory for more permanent storage can be facilitated or improved by mental repetition of the information or, even more effectively, by giving it a meaning and associating it with other previously acquired knowledge (prior knowledge) as well as motivation (Baddeley1992) [8]. Theoretically, the capacity of long-term memory could be unlimited; the main constraint on recall being accessibility rather than availability, the duration is controversial, it might be few minutes or life time. Suggested encoding modes are semantic (meaning) and visual (pictorial) in the main but can be acoustic also (Saul McLeod 2010) [9]. Tulving (1972) [10], proposed a distinction between episodic, semantic and procedural memory. Procedural memory is responsible for knowing how to do things. Semantic memory is responsible for storing information about the world. Episodic memory is the memory of personal experiences and specific events, including location, time, and emotions, it is the memory of autobiographical events (Cohen and Squire1980) [11].

4. Enhancing Memory

Visual enrichment of words by means of pictures enhances memory (Curran and Doyle, 2011; Hockley W.E, Bancroft, T. 2011; Bisson et al., 2014; Takashima et al., 2014) [12]. The results are consistent with the view that the semantic meaning of nameable pictures is activated faster than that of words thereby affording subjects more time to generate and elaborate meaningful associations between items depicted in picture form (Hockley W.E & Bancroft T. 2011) [12].

Gestures engage a number of sensory modalities and the motor system, and thereby create complex representations of word networks in the brain that highly impact retention (Macedonia et al., 2011; Macedonia, 2014) [13]. In a recent study, Mayer et al. (2015) [14] compared the memory performance for words in L2 that had been learned with gestures. Words learned with gestures scored best particularly in the long term. Altogether, empirical research on word learning demonstrates that enrichment of verbal information is key to word retention in L2 and to learning in general (Takashima et al, 2014, Shimojo and Shams, 2001; Shams and Seitz, 2008; Thelen and Murray, 2013) [15].

"How do we remember and why do we often forget?", everyone's memory is impacted by an infinite number of variables that can lead to a wide range of outcomes depending upon the circumstances. Stress, multitasking, poor nutrition and exhaustion are among the chief causes of memory lapses. If the brain records what is seen, heard, felt, tasted, and smelled with perfect precision, it can recall them better later. The fundamental problem lays in the brain's ability to record sensory information clearly—not its ability to "remember."



5. Brain-based learning style and applications

The brain-based is a new paradigm which establishes connections between brain function and educational practice. This paradigm has emerged in education and it has now been well known for almost 20 years. Brain-based education declares that, "In everything we do we use our brain; let's learn more about it and apply that knowledge". Eric Jensen (2008) [16] also says that:

"The brain is intimately involved in and connected with, everything educators and students do at school. Any disconnect is a recipe for frustration and potentially disaster. Brain-based education is best understood in three words: engagement, strategies and principles".

The prime role of the instructor is to organize as well as classify the given knowledge to the students (encoded information), in a synchronized mode between short term memory (WM) and long term memory to be stored and retrieved. If the encoded system is run accurately and sharply the decoding results will be agreeable and encouraging. The role of the short term memory (WM) is comprehending the language, producing it and acquiring its vocabulary; accordingly in the stage of language comprehension the interlocutor's message in class should encode a classified and organized form to be received in a space for information in the working memory and then it will be sent to the long term memory to be stored and retrieved later on. Therefore it is recommended that instructor's lesson plan should distribute the content among smaller chunk sizes not more than two to four chunks per 4 to 8 minutes, depending mainly on the learner's background of the introduced content and its degree of complexity. The less the prior knowledge of the learner and the greater the complexity of the content, results a less chunk size of content. Under no condition, should there be more than 15 consecutive minutes of content input so as to allow the encoding process to receive the information. Vision and listening (sensory system) are most important, since in many memories what is seen and heard make up most of the memory. The instructor after introducing the new chunks of material, associate them through engaging students in activities such as reading, highlighting or taking notes in order to enhance the transmitting of the neural network in the brain from the prefrontal cortex to the parietal lobe, or from the short term memory to the long term memory. With the information reaching the long term memory, permanent storage and easy retrieval is expected, but reinforcement, repetition, motivation, connecting with prior knowledge is highly recommended. These practices should sharpen the sensory system of the learners and keeps its high performance as well as strength the brain connections.

Permitting free regulated activities (games – puzzles- group work) can soften the stress, which causes serious learning and behavior risks; it boosts neurogenesis that accelerates learning. Also engaging in a healthy social relationship and creating social friendly environment in class is advisable because isolation is correlated with fewer brain cells and demolish of memory and feeble acquisition of language and learning. Merging between learning material and works of arts enhance attention, working memory, and visual spatial skills to remap the brain via neuroplasticity. Recent brain researches detected that memories are not fixed but is quite malleable, so instructors can employ a number of strategies to continually strengthen memory over time through reviewing the content such as written quizzes or raising topics for free discussions among learners. Performance is a key word to activate memory and revive the class atmosphere, encouraging participants to take part would enhance their acquisition of the learnt language.

6. Conclusion

The research is emphasizing the importance of memory in learning and how the categories of memory: short term memory and long term memory can correlate to the existence of learning. Instructor's message in class encodes a classified and organized form to be properly received and retained. Innovative activities and associations are vital because they improve the visual and phonological elements in the sensory system. Relatively the synchronization of introducing the learning material within a limited time results acquisition of knowledge.

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