Activated   Memory in Language Learning

Submitted By

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Dedication

To our dear parents, sisters and brothers.

To all our friends with whom we shared the university life.

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Contents

Abstract

Memory is the remembering or recognition of whether or not an item or event has occurred previously in the past or has not. Students' ability to learn a second language differs from each other, and each student learns a material better in a special method. These differences rely on students' ability, or to be specially mentioned in their memory.

Memory is a built store that must be accessed in some way in order for effective recall or retrieval to occur. This definition is based on the belief that memory is a multi-faceted, if not multi-staged, the system of connections and representations that encompass a lifetime's accumulation of perceptions.

The paper is divided into four sections. The first section deals with the definition of memory while the second section examines the components of memory and the different views about the relationships among working memory, long-term memory, short-term memory and language processing. The third section deals with the information processing stages. The final part of the study explores the effect of the classroom on memory activation. The fourth part studies the relationship between memory, language learning and the effect of interaction on language learning. Finally, the conclusion sums up the findings of the study.

1. Definitions of Memory

Eliasmith (2001:1) defines memory as the "general ability, or faculty, that enables us to interpret the perceptual world to help organize responses to changes that take place in the world". This indicates that there must be a tangible structure in which to incorporate new stimuli into memory. The form of this structure has been the source of much debate, and there seems to be no absolute agreement on what shape a memory structure actually takes, but there are many theories on what constitutes both the memory structure and the knowledge unit.

Schacter and Tulving (as cited in Driscoll, 2001:283) state that "a memory system is defined in terms of its brain mechanisms, the kind of information it processes, and the principles of its operation". Memory is a built store that must be accessed in some way in order for effective recall or retrieval to occur. This definition is based on the belief that memory is a multi-faceted, if not multi-staged, the system of connections and representations that encompass a lifetime's accumulation of perceptions.

In other word, "the amount of previously learned material that has been retained." The memory could be referred to as retention. Retention is another name for memory. There are two basic forms of retention: procedural and declarative. Procedural memory is how to perform an action, in sequence. Athletic skills represent an example of procedural memory. One learns the fundamentals, practice them over and over, and then they seem to flow naturally when we are in a game. Rehearsing for a dancing or musical performance would be other examples of procedural memory. Everyday examples might be remembering how to tie our shoes, drive a car, or get on the internet. Declarative memory involves memory for

facts, concepts and events rather than muscular procedures. Declarative memory is either episodic or Semantic. Semantic retention is the type of knowledge people associate with books and school: names, dates, and numbers. But it can also include personal information, such as telephone numbers and addresses (Cowan,2001:45).

Stiggins (2002:3) mentions that there is general agreement among most cognitive psychologists on some basic principles of the information processing system. First, there is the "assumption of a limited capacity", these limitations occur at different points in information processing, but it is widely held in all models that there are limitations as to how much new information can be encoded, sorted and retrieved.

Language input moves toward becoming intake or part of the fleeting memory of the student. This is intentionally taken care of and learned by the student. Whenever structures and vocabulary move toward becoming uptake, some portion of the long-term memory, it is viewed as intuitive and obtained. The uptake is the capability level of the student (Cowan,2001:55).

At the point when students take a test on the new material and do well, it is on account of they are being evaluated on their transient memory (intake). At the point when new material tags along and that more seasoned materials have not proceeded onward to long-term memory (uptake) it is supplanted by the more up to date material. That is the reason the sentence structure they knew so well for the test isn't as effectively created a couple of days after the fact and the reason one needs to invest so much energy assessing for last, most decisive tests toward the finish of the school year. The more introduction students need to include that is

conceivable to them the more probable the language will move toward becoming uptake and advance toward the long-term memory. Once more, this is, for the most part, a subliminal procedure in which language is procured so intelligible inout is the best device. Memory strategies can be utilized successfully for language adapting, yet they require more than an information of the systems themselves: they require a learning of language (Atkinson,1986:82).

2. Types of Human Memory

Driscoll (2001:283) states that "a memory system is defined in terms of its brain mechanisms, the kind of information it processes, and the principles of its operation". So , memory means the total of all mental experiences. In this light, memory is a built store that must be accessed in some way in order for effective recall or retrieval to occur. Memory is a having many facets, if not multi-staged, system of connections and representations that encompass a lifetime's accumulation of perceptions.

Eliasmith (2001:1) defines memory as the "general ability, or faculty, that enables us to interpret the perceptual world to help organize responses to changes that take place in the world". By this definition, one can understand that there must be a sensible structure in which to incorporate new stimuli into memory. The form of this structure has been the source of much debate, and there seems to be no absolute agreement on what shape a memory structure actually.

2.1 Long-Term Memory

Long-term memory (LTM) is the stage of the Atkinson–Shiffrin memory model where informative knowledge is held indefinitely. It is defined in contrast to short-term and working memory, that persist for only about 18 to 30 seconds. Long-term memory is commonly labelled as explicit memory (declarative), as well as episodic memory, semantic memory, autobiographical memory, and implicit memory (Atkinson,1986:89).

After passing through the short-term memory, relevant information is moved to long-term storage. At this stage, the brain is less likely to forget important details. At the same time, the long-term memory can diminish over time if one doesn't refresh his knowledge. (Morris et al,1977:518).

As opposed to the previous memory constructs, long-term memory has unlimited space. The crucial factor of long-term memory is how well organized the information is. This is affected by proper encoding (elaboration processes in transferring to long-term memory) and retrieval processes (scanning memory for the information and transferring into working memory so that it could be used) (Ibid.).

Abbot (2002:1) suggests that long-term memory "is that more permanent store in which information can reside in a dormant state out of mind and unused until you fetch it back into consciousness". In order to incorporate new information, long-term memory must be in communication with the short-term memory. There are several categories of long-term memory, and there are many suggestions as to how memory units are represented in the mind.

Long-Term Memory divided into the following :

2.1.1 Explicit memory

Brown, G. D. A., Preece, (2000:250) admit that explicit memory (declarative memory) means all memories that are consciously available. These are encoded by the hippocampus, entorhinal cortex, and perirhinal cortex, but consolidated and stored elsewhere. The precise location of storage is unknown, but the temporal cortex has been proposed as a likely candidate.

2.1.2 Implicit Memory

Implicit memory (procedural memory) refers to the use of objects or movements of the body, such as how exactly to use a pencil, drive a car, or ride a bicycle. This type of memory is encoded and it is presumed stored in the striatum and other parts of the basal ganglia. Which is believed to mediate procedural memory and other brain structures and is largely independent of the hippocampus (Foerde and Poldrack, 2009:1083).

Manelis and Hanson (2011:32) find that the reactivation of the parietal and occipital regions was associated with implicit memory. Procedural memory is considered non-declarative memory or unconscious memory which includes priming and non-associative learning.

2.2 Short-Term Memory

Is the stage that falls under the specialization of working memory, which

temporarily stores information when it is triggered by different stimuli. Short-term memory can only hold a maximum of (7) items at one time. The time limit, of short memory which is usually between (10) seconds to a minute. Short-term memory: A system for temporarily storing and managing information required to carry out complex cognitive tasks such as learning, reasoning, and comprehension. Short-term memory is involved in the selection, initiation, and termination of information-processing functions such as encoding, storing and retrieving data (Atkinson and Shiffrin,1968:89).

In a typical test of memory span, an examiner reads a list of random numbers aloud at about the rate of one number per second. At the end of a sequence, the person being tested is asked to recall the items in order. The average memory span for normal adults is(7).Short-term memory is also termed recent or working memory (Ibid.).

٢.٣   Sensory Memory

When someone senses are triggered by a stimulus, his brain briefly stores the information. For example, one smells freshly baked bread and can only remember its scent for a few seconds before it vanishes. Even though the bread is no longer in front of him, people mind still holds onto its impression for a short period. The brain then has the option to process it through the memory banks or forget about it. In learning, sensory memory is triggered by a visually compelling

image, background music, or any other element that utilizes the senses (Adams,

A. M. and Gathercole,2000:241).

In sensory memory, information is gathered via the senses through a process called transduction, by receptor cell activity, it is altered into a form of information that the brain could process. These memories, usually unconscious, last for a very short amount of time, ranging up to three seconds. Our senses are constantly bombarded with large amounts of information. Our sensory memory acts as a filter, by focusing on what is important, and forgetting what is unnecessary. Sensory information catches our attention, and thus progresses into working memory, only if it is seen as relevant, or is familiar (Baddeley,2001:581).

3. Information Processing

Information processing is the change of information in any manner detectable by an observer. In processing describes everything that happens in the universe, from the falling of a rock to the printing of a text file from a digital computer system. In the latter case, an information processor is changing the form of presentation of that text file. Information processing may more specifically be defined as the conversion of latent information into manifest information (McGonigle and Mastrian, 2011:56).

Information processes are executed by information processors. For a given information processor, whether physical or biological, a token is an object, devoid of meaning, that the processor recognizes as being totally different from other tokens. A group of such unique tokens recognized by a processor constitutes its basic "alphabet"; for example, the dot, dash, and space constitute the basic token

alphabet of a Morse-code processor. Objects that carry meaning are represented by patterns of tokens called symbols. (Huitt, 2000:38).

Again, exactly how and where the controls operate is a question of some debate, but the actuality of some type of system that requires some processing capacity is generally accepted. The belief in the interaction of new information with stored information is a third key point of the cognitive study. This is usually demonstrated with a bottom-up or top-down system or a combination of the two. A bottom-up system is predicated on the belief that new information is seen as an initiator which the brain attempts to match with existing concepts in order to break down characteristics or defining attributes (Gibson, 1979:316).

After that, infants begin to vocalize the sounds of the mother tongue and omit sounds not found in that language. It has also been discovered that infants begin to lose the ability to discriminate sounds not in the mother tongue at about six to seven months of age. All of these factors play a significant role in the development and understanding of how the mind operates (Jusczyk, 1997:58).

3.1 Information Processing Stages

Anderson and Bower (1973:13) propose there are many suggestions that the learning process involves three key stages:

In first stage Input, the brain is exposed to stimuli, at which point it analyzes and evaluates the information. For example, the online learner reads a passage and determines whether it's worth remembering (Ibid.).

In the second stage output, storage the brain stores the information for later use. It also adds it to our mental schema and encodes it. If the information is not reinforced, the brain may simply forget it over time (Ibid:15).

The third stage output, the brain decides what it's going to do with the information and how it will react to the stimulus. For example, after reading the passage, the individual uses the information they learned to overcome a challenge (Ibid.).

3.2 Working Memory

Working memory is a cognitive system with a restricted ability that is responsible for temporarily holding information available for processing. Working memory is important for reasoning and the guidance of decision-making and behaviour. Working memory is used synonymously with short-term memory, but some theorists consider the two forms of memory distinct, working memory allows for the manipulation of stored information, whereas short-term memory only refers to the short-term storage of information. Working memory is a theoretical concept central to cognitive psychology, neuropsychology, and neuroscience. Working memory is considered to have limited capacity (Malenka and Nestler,2009:313).

Miyake(1999:56) mentions that working memory means the capacity to perform some complex tasks depends critically on the ability to retain task-relevant information in an accessible state over time and to selectively process information in the environment. In addition, one must be able to selectively attend to the relevant objects because there is more information in a scene that can be processed by individuals perceptual systems. The contents of working memory and attention

often, interfere. If the directions stored in working memory guide someone to turn left after the yellow water tower, then attention may be guided towards objects that resemble a yellow water tower.

In general, memory span for verbal contents (digits, letters, words, etc.) depends on the phonological complexity of the content (i.e., the number of phonemes, the number of syllables), and on the lexical status of the contents (whether the contents are words known to the person or not). Several other factors affect a person's measured span, and therefore it is difficult to pin down the capacity of short-term or working memory to a number of chunks. Nonetheless, Cowan proposed that working memory has a capacity of about four chunks in young adults (and fewer in children and old adults) (Cowan,2001:87).

Working memory is a system for temporarily storing and managing the information required to carry out complex cognitive tasks such as learning, reasoning, and comprehension. Working memory is involved in the selection, initiation, and termination of information-processing functions such as encoding, storing and retrieving data (Service,1998:283).

4. Memory and Language Learning

The medial temporal region is richly connected to widespread areas of the cerebral cortex, including the regions responsible for thinking and language. Whereas the medial temporal region is important for forming, organizing, consolidating, and retrieving a memory, cortical areas are important for the long-term storage of knowledge about facts and events and for how this knowledge is used in everyday situations (Green and Oxford,1995:261).

To serve these functions, the prefrontal cortex also interacts with a large network of posterior cortical areas that encode, maintain, and retrieve specific types of information, such as visual images, sounds, and words, as well as where important events occurred and much more (Anderson,1976:471).

Cairns et al (2011:274). points out the importance of memory and its role in learning the language. Working memory provides the temporary storage that is very useful in language comprehension process. In language production, working memory becomes the place where the pronunciations of the words are put in a linear order on the basis of the syntactic and semantic relations in the intended utterance before the construction of a motor program that produces the utterance.

Moreover, through the phonological loop, the new vocabulary is being stored and rehearsed in working memory before it transfers to the long-term memory. This information is very useful to second language teachers in formal class and also to the independent learner who tries to learn the language. In this case, they can maximize the function of memory in learning language (Ibid.).

4.1 CLT and Memory Activation

Communicative language teaching (hence CLT) first emerged in European countries in the 1970s and was successfully implemented into the English

curriculum in other countries in the 1980s. Following the emergence of CLT in English-speaking nations, CLT is the most influential language teaching methodology in the world (Ying, 2010:179).

Due to the needs of international communication in the early 1990s, the CLT approach was introduced in many countries where English is learnt and spoken as a foreign language in EFL classrooms.It aims to develop students ability to communicate meaningfully and to build on accumulated classroom experience as well as current language teaching theory. More specifically, it attempts to combine the broader view of communicative competence that formed a major impetus to the development of CLT (Ying, 2010:67).

Communicative activities include any activities that encourage and require a learner to speak with and listen to other learners, as well as with people in the program and community. Communicative activities have real purposes: to find information, break down barriers, talk about self, and learn about the culture. Even when a lesson is focused on developing reading or writing skills, communicative activities should be integrated into the lesson. Furthermore, research on second language acquisition (SLA) suggests that more learning takes place when students are engaged in relevant tasks within a dynamic learning environment rather than in traditional teacher-led classes (Ibid.).

CLT has become popular and widespread in second foreign language teaching, it emphasises the process of communication and leads learners to roles different from the traditional approach. The role of the learner is a negotiator between the self, the learning process, and the object of learning. Learners should be actively engaged in negotiating meaning within the classroom procedures and

activities (Richards and Rodgers, 2001:78).

Teachers' roles in the communicative approach are to facilitate the communication process between all participants in the classrooms. The teacher is also a co-communicator who engages in communicative activities with the students. In addition, the teacher acts as an analyst, counsellor, and group process manager. In the CLT classroom, it seems to be student-centred which does not depend on their teachers all the time, waiting for instructions, words of approval, correction, advice or praise (Chang, 2011:17).

Similarly, Ozsevik (2010:24) argues that learners in CLT classrooms are supposed to participate in classroom activities that are based on a collaborative, rather than individualistic, approach to learning. They are portrayed as active participants in the language learning process.

The emphasis in communicative language teaching in the processes of communication, rather than mastery of language forms, leads to different roles for learners from those found in a more traditional second language classroom (Breen and Candlin, 1980 : 110).

Active learning instructional strategies can be created and used to engage students in (a) thinking critically or creatively, (b) speaking with a partner, in a small group, or with the entire class, (c) expressing ideas through writing, (d) exploring personal attitudes and values, (e) giving and receiving feedback, and (f) reflecting upon the learning process .It should also be noted that active learning instructional strategies can (a) be completed by students either in-class or

out-of-class, (b) be done by students working either as individuals or in group, and (c) be done either with or without the use of technology tools (Vogel, and Machizawa,2004:1)

4.2 Interaction and Activating Memory

Interaction is foundational to effective learning. Often, however, the term interaction is used without a clear understanding. The goal of interaction is to lead students to a point of reflection that causes them to evaluate existing assumptions and then choose to integrate or discard the new information. By itself, interaction has very little value. It is possible to interact at length with concepts, only to find that everything read or heard is a blur because active engagement is defined by reflection and validation of the content being explored. Effective interaction, then, is a process of awakening a students' internal reflective processes.

Interaction can be defined as: " Interactions occur when these objects and events mutually influence one another. An instructional interaction is an event that takes place between a learner and the learner's environment. Its purpose is to respond to the learner in a way intended to change his or her behaviour toward an educational goal. Instructional interactions have two purposes: to change learners and to move them toward achieving their goals." (Alvermann and Phelps, 2005:131)

One way for students to shoulder the responsibility for learning is for them to be the readers, writers, speakers, listeners, and thinkers in the classroom through active engagement in social interaction with others (Vacca, Vacca, and Mraz,

2011:57).

Francis (1999:262)admits that interaction between students can include collaboration and increase students' comfort with each other and with the learning environment. For example Student↔student interaction-based activities which are: group projects, group case studies, peer instruction, role playing, synchronous or asynchronous discussions or debates, collaborative brainstorming, and peer review of selected work (For more on using Canvas tools to manage peer review.

Any of these examples can be used on a large or a small scale ranging from semester-long project groups doing research and presenting results to an optional live meeting where those present discuss a short video case or a discussion forum where they brainstorm alternatives to a textbook problem(Ibid.).

Kirby(1999:205) states that depending on the size of the class, the teacher can encourage student↔student interaction class-wide or in smaller groups or pairs. When working with smaller groups, it helps to emphasize individual accountability, positive interdependence, and positive interaction in grading the group's work. This strategy leads to three grades on a group project emphasizing the three aspects of group work: Individual contribution to the group projec, synthesis of the individual parts into a project that shows collaboration, consensus, and learning and working together to encourage and facilitate each other's efforts to complete the project

Conclusion

The last decade has witnessed an important step forward in understanding the relationship between memory and language and how these key features of the human cognitive system interact. There is a strong interconnected relationship among the working memory, short-term memory, long-term memory and the information processing in language acquisition and learning. The study of memory at large is of extreme importance to the understanding of the human mind.

There are in fact many ways of learning and studying so that more than just intellect is involved, where remembering is the natural outcome, both within the classroom and in the real world. the successful learners are the ones who are engaged in activities that thoroughly engage them. Along with a decent working memory, learners need to be able to commit what they have learned to their long-term memory for it to be of any use.

Native and foreign language acquisition appears to be achieved through the ability to represent serial-order information in working memory, while language perception and production rely on intentional control functions. The debate continues about the extent to which each of these factors has the crucial impact on the process of acquisition and learning language.

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