

## THE ROLE OF MEMORY IN FOREIGN LANGUAGE LEARNING: SHORT-TERM AND LONG-TERM MEMORY MECHANISMS

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**Abstract:** *Today, learning foreign languages, especially English, has become an inseparable part of our lives. Knowledge of a foreign language opens new opportunities in every field—conducting scientific research, reading foreign sources, communicating with international partners, or simply broadening one’s worldview. Therefore, learning English is considered one of the most important goals for every student. However, the language learning process is not always easy. Many students struggle with memorizing new words, recalling grammatical rules, pronouncing correctly, or applying learned material in practical communication. The success of these processes is, in fact, closely related to how human memory functions. Memory is a crucial component of the human brain’s activity, allowing one to receive, store, and retrieve information when needed. In the process of language learning, we encounter new sounds, words, phrases, and grammatical rules every day. Efficient memory functioning is essential to retain and correctly apply this information.*

**Keywords:** *Foreign language learning, English language, short-term memory, long-term memory, cognitive processes, memory consolidation, pedagogy, attention, motivation*

### INTRODUCTION

Today, learning foreign languages, especially English, has become an inseparable part of modern life. In the contemporary world, knowledge of a foreign language is not limited to academic or professional purposes—it has become a vital tool for personal development, intercultural communication, and accessing global information. Students and learners encounter foreign languages in multiple contexts: university lectures, scientific research, media, professional correspondence, travel, and online communication. As a result, mastering English has transformed from a simple educational requirement into a key competence that shapes opportunities across social, academic, and professional spheres. The benefits of learning English are numerous. It allows students to access a wealth of scientific literature that is often unavailable in their native language, facilitating participation in international conferences, collaboration with foreign researchers, and the integration of global knowledge into local contexts. Furthermore, English proficiency enhances career opportunities by providing access to multinational organizations,

international internships, and research projects. Beyond professional and academic advantages, knowledge of English also broadens one's worldview, enabling learners to appreciate diverse cultures, engage with global media, and understand perspectives that differ from their own. However, despite its importance, learning a foreign language is rarely a straightforward process. Many students experience difficulties in memorizing new vocabulary, understanding and applying grammatical structures, achieving correct pronunciation, and using learned material effectively in real-life communication.

### 1. Memory as a Central Concept in Language Learning

Memory is the cornerstone of all language acquisition processes. It is not merely the ability to memorize words; rather, it is a complex cognitive system that allows the brain to encode, store, and retrieve linguistic units, including vocabulary, grammatical rules, and pronunciation patterns. This system is activated continuously as learners process new language input, integrate it with existing knowledge, and apply it in communication. In the context of foreign language learning, memory governs all aspects of speech activity: listening, reading, writing, and speaking. Consider the example of a student learning the word "achievement". The process involves multiple stages:

- ★ Hearing the word in a sentence allows the student to recognize its pronunciation and intonation.
- ★ Seeing the word in written form reinforces its orthographic pattern.
- ★ Writing the word in exercises engages motor memory, strengthening neural connections.
- ★ Using the word in a self-generated sentence activates active recall and contextual understanding.

This multi-stage engagement illustrates how memory is not passive but actively constructs connections between different representations of the same concept. The richer the network of associations, the stronger the memory trace becomes, making retrieval more efficient.

1. **Encoding:** The first step in memory formation, where new information is transformed into neural representations. Attention and emotional engagement play a critical role here; if the learner is distracted or unmotivated, encoding is weak, and retention is poor.

2. **Storage:** Encoded information is temporarily held in short-term memory or consolidated into long-term memory. The depth of processing during storage determines how easily the material can be recalled.

3. **Retrieval:** This final stage is the ability to access stored information for active use in communication. Efficient retrieval allows fluent and spontaneous language production.

✓ **Encoding Support:** Introduce new vocabulary or structures with clear pronunciation, visual aids, and examples. For instance, when teaching the phrasal verb

“break down”, present it in multiple contexts: “The car broke down on the way to school” and “She broke down in tears”. This helps learners form distinct neural representations.

✓ **Storage Reinforcement:** Encourage learners to practice actively through writing, speaking, and interacting with the material. Spaced repetition and contextual exercises enhance long-term retention.

✓ **Retrieval Practice:** Use interactive activities, quizzes, and dialogues to encourage learners to recall and apply knowledge spontaneously. For example, ask students to describe a personal experience using newly learned vocabulary rather than simply translating from their native language.

By engaging multiple sensory and cognitive channels—auditory, visual, kinesthetic, and emotional—students form a rich network of memory traces. These traces are more durable and more readily accessible during active communication.

## 2. Short-Term Memory (STM) – Rapid Processing and Forgetting Risk

Short-term memory (STM), often referred to as working memory, plays a crucial role in language learning. It acts as a temporary storage system that holds information for immediate use, typically ranging from a few seconds to about a minute. STM has a limited capacity—research indicates it can manage roughly 5–9 discrete items at a time. Despite its brevity, STM is vital because it allows learners to process incoming language, understand meaning, and produce responses during conversations or tasks.

➤ **Comprehending Spoken Language:** When a student listens to a sentence, STM temporarily stores each word, allowing them to understand the meaning of the sentence as a whole. For example, in the sentence “Although it was raining, she decided to go for a walk”, the learner must retain the initial phrase in memory while processing the rest of the sentence to grasp the full meaning.

➤ **Constructing Sentences:** STM enables students to plan and produce grammatically correct sentences. They retain the beginning of a sentence in memory while forming the remainder, ensuring correct word order and tense usage.

➤ **Responding in Real-Time Communication:** In classroom discussions or dialogues, STM allows learners to quickly retrieve relevant vocabulary and grammatical patterns to respond appropriately without long pauses.

### Challenges of STM in Language Learning:

A significant challenge is the transition from STM to long-term memory (LTM), known as consolidation. Many students memorize vocabulary or rules during a lesson but forget them shortly afterward. This occurs because the information was only held temporarily in STM without being deeply processed or linked to existing knowledge in LTM.

**Cognitive Overload:** Trying to process too many new words or complex grammatical structures at once can exceed STM capacity, leading to confusion and forgetting.

**Distraction and Divided Attention:** External distractions or multitasking reduce STM efficiency, making encoding and recall more difficult.

**Lack of Meaningful Associations:** Information that is abstract or unconnected to prior knowledge is harder to retain in STM.

Teachers can use several evidence-based strategies to optimize STM and facilitate its transfer to LTM:

○ **Chunking:** Breaking information into small, meaningful units reduces cognitive load. For example, a long sentence “The project manager, who had worked in several countries, presented the proposal carefully” can be chunked into smaller segments: “The project manager” | “who had worked in several countries” | “presented the proposal carefully”.

○ **Multi-Sensory Input:** Engaging auditory, visual, and kinesthetic channels simultaneously enhances encoding. Learners hear the word, see it written, say it aloud, and write it down, creating multiple memory pathways.

○ **Rapid Association:** Linking new words to known concepts, native language equivalents, or strong emotional experiences strengthens memory retention. For instance, associating the word “astonished” with a memorable personal experience of surprise helps encode it more deeply.

○ **Interactive and Immediate Practice:** Classroom activities that require quick responses, such as question-and-answer drills, flashcards, or games, stimulate STM and prepare it for consolidation.

This approach actively engages STM while preparing information for transfer to LTM, ensuring the material is not lost shortly after the lesson.

### 3. Long-Term Memory (LTM) – The Source of Automatism

Long-term memory (LTM) is the cornerstone of lasting language competence. Unlike short-term memory (STM), which temporarily holds information for immediate processing, LTM is capable of storing vast amounts of information over extended periods, ranging from days to a lifetime. For learners of a foreign language, LTM allows the retention of vocabulary, grammatical structures, pronunciation patterns, and communicative skills that can be accessed spontaneously during conversation.

LTM in language learning can be divided into two primary categories:

<p>- <b>Semantic Memory:</b> This includes knowledge of vocabulary meanings, grammar rules, and factual information about the language. Semantic memory provides the foundation for understanding and producing correct sentences. For example, knowing that the word “collaborate” means “to work together” is semantic knowledge.</p>	<p>- <b>Procedural Memory:</b> This involves the ability to apply learned language automatically without conscious thought. It governs pronunciation, grammar usage, and fluency in speech. For instance, a student may automatically say “I have finished my homework” correctly without consciously thinking about the present perfect structure. Procedural memory is what allows learners to move from knowledge of rules to</p>
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	<b>fluent, spontaneous communication.</b>
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Although LTM has virtually unlimited capacity, not all information successfully transitions from STM. Common obstacles include:

- **Lack of Repetition:** Without repeated exposure, information in STM fades before it is consolidated into LTM.
- **Absence of Contextualization:** Words or rules learned in isolation are more difficult to recall in real-life situations.
- **Limited Active Engagement:** Passive reading or listening often fails to create strong memory traces.

Teachers can facilitate the development of long-term memory through deliberate and structured practices:

1. **Contextual Learning:** Present vocabulary and grammar in meaningful contexts rather than isolated lists. For example, teach the word “*negotiate*” in scenarios such as role-plays of business meetings or classroom debates. This approach helps students link the word to experiences and situations, enhancing retention.

2. **Active Recall and Generation:** Encourage students to actively use learned material by forming original sentences, writing short paragraphs, or participating in dialogues. This strengthens memory traces and supports proceduralization.

3. **Spaced Repetition:** Implementing a system where learned material is reviewed at gradually increasing intervals (e.g., after 1 day, 3 days, 7 days, 2 weeks) helps to combat forgetting and solidify LTM. This technique is supported by extensive cognitive research on the “forgetting curve.”

4. **Multi-Channel Reinforcement:** Use a combination of auditory, visual, and kinesthetic activities to consolidate learning. For instance, students can listen to a dialogue, write down new expressions, and role-play the same scenario.

5. **Integration into Daily Life:** Encourage students to apply learned vocabulary and grammar in real-world situations, such as journaling, discussing current events, or online language exchanges. Practical use strengthens procedural memory and automates language skills.

By following these steps, the verb is internalized and becomes part of procedural memory, allowing fluent and automatic use without conscious effort.

#### **4. Integration of Attention, Emotion, and Motivation in Language Learning**

Memory efficiency in foreign language learning is closely linked to cognitive and affective factors, particularly attention, emotion, and motivation. These elements do not function independently; rather, they interact to enhance encoding, storage, and retrieval of new language material. Educators who understand these mechanisms can design lessons that optimize memory performance and promote deeper learning. Attention is the cognitive process that determines what information enters memory. Without focused attention, even

repeated exposure to vocabulary or grammar rules may fail to create strong memory traces. In language learning, attentional focus is essential at multiple stages:

1. **Segmented Instruction:** Break lessons into 15–20 minute high-focus intervals to prevent cognitive fatigue.

2. **Interactive Engagement:** Use pair work, group discussions, or short quizzes to maintain attention.

3. **Immediate Feedback:** Correct errors promptly to redirect attention and reinforce learning. Example, When teaching new vocabulary such as “astonished”, students might:

This sequence keeps learners’ attention actively engaged at every steps. Emotions play a critical role in memory consolidation. Positive emotional experiences increase activity in the hippocampus, a brain region essential for forming long-term memories. Conversely, stress or anxiety can impair memory formation and retrieval. In language learning, emotional engagement can be stimulated through:

- ✓ Personal Relevance: Linking content to students’ own experiences.
- ✓ Humor and Storytelling: Making lessons enjoyable enhances retention.
- ✓ Challenge and Success: Tasks that are neither too easy nor too difficult motivate learners and generate positive emotional responses.

Example:

A teacher introduces the phrasal verb “break down” with two contexts: a car breaking down and a character breaking down emotionally in a story. Students are asked to relate each scenario to a personal experience, creating strong emotional connections that reinforce memory.

**Conclusion.** Learning a foreign language is not merely memorizing words; it is a complex cognitive process that involves receiving, processing, storing, and retrieving information. Short-term memory allows learners to process new information immediately, while long-term memory consolidates knowledge for durable, automatic use. Attention, emotion, and motivation further enhance memory efficiency, ensuring that learned material can be applied fluently and confidently.

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