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# IMAGINE TO LEARN: MNEMONICS APPLIED TO FOREIGN LANGUAGE VOCABULARY

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**Abstract**: *This article investigates the role of mnemonics, particularly the keyword method, in second-language foreign vocabulary acquisition through practical lenses. The keyword method capitalizes on a keyword, which is a mediator between one's native language and the language one is learning. Learning a foreign vocabulary by this method is achieved through two stages: by connecting the unknown word to a keyword on the basis of phonological similarity, and connecting the keyword to the unknown word's meaning via a mental image. This paper examines practical ways Uzbek learners apply mnemonic techniques to expand their lexicon. Having identified instances where mnemonics can fall short, this paper has also outlined viable solutions to address these limitations.*

**Keywords**: *associative networks, verbal connections, visual connections, acoustic link, dual coding, elaborative encoding, 'expertise reversal effect'.*

Mnemonics comes from the Greek word *mnēmonikos,* meaning 'of memory'. In modern terms, it includes a wide range of techniques and methods to aid the memory in remembering anything, including, but not limited to, lists, formulas, numbers, and even unknown words. This article will focus on a specific type of mnemonics, which is the Linkword (or the keyword method).

Research in cognitive psychology indicates that new information is remembered better when it is meaningfully connected to knowledge that existed. Prior knowledge provides a scaffold to retrieve new information, likely because it allows learners to form richer networks by means of association (Craik & Lockhart, 1972). This is why the human brain thrives on connections, and multiple mental associations hold water. When we think about an apple, we do not only see the letters, but we actively imagine an apple, remember its size, color, taste, the place where we ate it, the people we ate it with, etc. Or else, linguistically speaking, different word forms, classes, phrases and idioms involving this word form a web of brain neurons. These are examples of connections that a human brain forges with the simple word 'apple'.

Likewise, a foreign word consists of a set of unfamiliar acoustic and visual codes that need to be decoded into meaning inside the brain. The production of new words becomes possible only after these codes are related to prior knowledge and linked with semantic representations (Atkinson & Raugh, 1975). Mnemonics presents a way of storing the information by forging two kinds of connections: verbal and visual. Thus, it facilitates the process of learning new words in a

relatively quicker way than methods that rely on repeated exposure to words, hoping they will stick to the memory somehow.

The process of finding a word or phrase in one's own native language (or any language/dialect one is well aware of) that matches how the unknown word sounds is called "forming an acoustic link". This word is essentially the linkword (or the keyword), which links the visual images on two sides of an acoustic link – the translation of the foreign word and the word one came up with. For instance, an English-learning Uzbek student memorizing the word "hollow", might think of "palov". Once the keyword is created, he might imagine a platter of palov, but with the rice in the center sinking inward, forming a deep hollow like a crater. He's scooping rice from the edges, but he's afraid that his hand might get swallowed up too, as he thinks to himself: "Why is palov hollow in the middle?"

The keyword does not necessarily have to sound just like the foreign word. It may rhyme with the foreign word, or it may not rhyme – but it will still have patterns: either it may sound like the first syllable (cartoon – karta (cards)), the last syllable (approach – tilmoch (translator)), or may have the same consonant, but different vowels of an unknown word (adventure – divancha (a small sofa)). In addition, instead of a single keyword, a student may utilize a keyword phrase, which fares particularly well for words having multiple syllables. For example, the word 'alongside' can be broken down into two Uzbek words "ilon, sayt" (a snake, a website). This approach has proven to be as effective as single-keyword mnemonics by Atkinson and Raugh (1975), who came to this conclusion after their experiment with 52 undergraduate learners of a Russian vocabulary.

Many researchers have conducted studies on the effectiveness of mnemonics by comparing groups who trained with the keyword method to control groups who used non-mnemonic approaches to learning new vocabulary. Results have shown that using mnemonics yielded better results, with the keyword groups outperforming control groups in both short-term and long-term recall (Atkinson & Raugh, 1975; V. Siriganjanavong, 2008).

There are different methods for effective information retrieval, the most familiar and by far the commonly practiced method being rote repetition (Craik & Lockhart, 1972; Dunlosky et al., 2013). The way in which rote-memorization functions is that it strengthens the memory traces by actively and repeatedly retrieving the concept over time. The major problem with this method is that it is boring, and requires that information be repeated at spaced intervals over time, which is quite demanding. (Anari et al., 2015). The second point is that remembering new information does not solely rely on strengthening memory traces – the connections are necessary as well. The more vivid and meaningful those connections are, the more we are likely to remember the new concept and retrieve it from the memory effectively. This is exactly what mnemonics does.

The keyword strategy makes use of dual coding, that is, combining verbal and visual information to strengthen memory traces (Paivio, 1986). One of the simplest examples is when a teacher uses the whiteboard to supplement her/his speech. The brain processes both types of

information separately, creating two different memory paths, both leading to the same information. In our case with the keyword method, dual coding ensures that an individual can recall a foreign word either through its sound, its image, or through both together when needed. Atkinson and Raugh (1975) demonstrated that learners using the keyword method outperformed control groups on both immediate and delayed tests. In one experiment, the group which was instructed to use keywords scored 88% correct on a final vocabulary test, compared to only 28% for controls. The positive results can be attributed to visual and verbal memory links being formed, allowing for a faster and easier recall of the coded information through multiple paths. Johnston (1974) emphasizes the significance of vivid mental imagery in 'dual-link' encodings in her dissertation, and she suggests that the use of imagery makes the new words much more memorable.

Secondly, this method improves students' motivation to learn more and more vocabulary, as it is emotionally engaging. The process of creating interactive images is fun and makes learning faster, easier, more enjoyable, and more effective, facilitating the learning process (Anderson, Shirey, Wilson, and Fielding, 1987; Dweck, 1986; Malone and Lepper, 1987). Gardner (1985) suggests that motivational factor enhances performance and achievement, because it makes the learners to devote more time and effort to what is being learned. However, individual preferences must be taken into account, as not everybody will like or enjoy mnemonics. This may be due to the fact that some students have already adopted certain strategies that they find effective, and thus, are reluctant to embrace new methods and invest time in mastering them (Anari et al., 2015).

However, mnemonics has its limitations. The method might be especially helpful when actively trying to remember information, not when fathoming it (Butler, 2007). It does not replace traditional methods of learning through context, deep analysis, lead-ins, or prediction that are thought to enhance understanding. Dual coding does not necessarily help understand the concept, but rather remember it better and retrieve it in the longer term. Yet still, learners who use mnemonics perform better even on comprehension tests, such as matching, cloze sentences, or creating original sentences, simply because they learn more that can be applied on those tests (Mastropieri, Scruggs, & Fulk, 1990).

The keyword can be put in an image (visual mnemonics) and in a sentence (verbal mnemonics) as well. In the example of "hollow" provided above, both types of mnemonics are used, and choosing either of them is a matter of preference. It should be considered that the memory might benefit from mental scenes rather than static mental pictures, as scenes involve action and greater dynamism.

With that being said, younger children (under 7-8 years) are thought to benefit more from verbal mnemonics than from imagery, because they struggle to conjure up mental images in light of ongoing development of their imagery through early and middle childhood. Several studies mention that children develop forming verbal mnemonics before imagery mnemonics (Pressley,

Levin, McCormick, 1982). This makes sense, as in their early ages, children are more exposed to stories, songs and rhymes that help them better manipulate sentences. However, this is not a universal rule, and some younger fellows might do equally well with mental imagery, especially if they are strong visual thinkers.

On the other hand, adults could leverage visual mnemonics alone, as combining it with verbal phrasing might put an extra load on the brain and take more time. The goal of mnemonics is to make learning process as simple and quick as possible – without additional strain that comes from other methods, like rote-memorization. Nevertheless, this does not rule out the need for periodic review of vocabulary learned through mnemonic strategies; the intervals are simply longer than those for rote-memorization, so that fewer repetitions are required to remember for longer (Atkinson & Raugh, 1975; Pressley et. al., 1981). In fact, regardless of the method used, information is strengthened in the brain through repetition, because it solidifies neural pathways.

Below, a table is given for Uzbek learners of English. The words provided fall into a B1-B2 category and have been provided in the familiar Uzbek language with English translations in (brackets). Let us look at more examples of foreign words using the keyword method.

Table 1. Words for learning with the keyword method

| English word | A keyword | Mental scene |
|---|---|---|
| 1. To accuse | Oqyuz (porcelain face) | The sculpture of a girl with porcelain face breaks in a museum. Everybody points fingers at you and accuses you. |
| 1. To blame | Bilaman (I know) | A wife points at his husband as she shouts: “Bilaman! Hammasini bilaman!” (I know everything!) She blames him and turns him in. |
| 1. Bias | Poyezd (a train) | You are running behind the train, waving your ticket and shouting it to stop, but it just left. You turn around and see many people running after the train like you. You shout together: “That’s bias!” |

| | | |
|---|---|---|
| 1. Pleased | Parazit (parasite) | Parasite says "I'm pleased", as it's feeding on your groceries. |
| 1. Genuine | Jin (genie) | A boy can't believe his eyes – he's shaking the genie to see if he's real. |
| 1. Suddenly | Sotqinlik (treachery) | Your close friend suddenly stabs you in the back. |
| 1. Worse | Voris (heir, successor) | Because of a bad heir, people are being killed and the whole kingdom is in ruins. |
| 1. Call off | Qulf (a lock) | The coach locks the gym after he banishes people – a game has been called off. |
| 1. Nevertheless | Navo dilingizda (a melody is in your heart) | Your grandfather doesn't cry in public. But he is crying nevertheless, because the melody penetrated his heart. |
| 1. Fall apart | Olapar (Dalmatian) | You drop your dalmatian toy, and it falls apart. |

Some studies have found that mnemonics works best for nouns, then verbs and adjectives, and that concrete words are easier to remember than abstract words (Ellis & Beaton, 1993). However, in the table above, the author has presented examples from different word classes and even phrasal verbs to point out that what matters is the keyword chosen and its quality inside the mental image. The keyword should be similar in sound to the foreign word and easy to picture, thus making the mental scene more vivid. It is not enough to just place the two items together in one image – they should interact. In addition, the mental image should capitalize on the five senses as much as possible: sight, touch, sound, taste and smell. In mnemonics, we usually see the image and might even touch it – however, elaborative encoding, that is, using more senses gives the brain more associations, making the retrieval quicker.

There have also been suggestions that a foreign word is recalled better if the image is more bizarre and unusual (Persensky & Senter, 1970). Although this statement is bandied around by many experts and teachers, it is often enough to create meaningful interactions between images (Wollen, Webber & Lowry, 1972).

Watching YouTube videos about the keyword method, the author looked through the comments and took screenshots of some that were skeptical about the method introduced. They have mentioned several reasons why they were struggling to use mnemonics, and asked for tips for its effective application. In this section, the author will address several of these issues from her and her students' learning experiences so that readers with similar difficulties may benefit from possible solutions. The author doesn't claim that her methods will necessarily be effective; rather, she outlines the problem and proposes potential solutions, leaving their interpretation open.

When using mnemonics, the brain makes use of 'dual coding' and creates two links: foreign word → the keyword; the keyword → meaning. Confusion may occur at first, if the keyword is more vivid, emotional, or concrete than the real definition. This is particularly true for many word classes, save nouns. For instance, someone learning the word 'suddenly', may think that 'treachery' (English for "sotqinlik" which was the keyword for 'suddenly') is the translation. To address this, the concept should act out the definition, not just the keyword. For the same word, the focus should be directed towards the act of stabbing someone in the back with lightning speed, just when the other character turns. Adding more elements to it, such as shock in the character's expression (risen eyebrows, mouth wide open), and lightning striking suddenly, putting fear in the other character's heart, may aid the recall better. The process seems lengthy in a written format, however, refining the imagery should take no more than 10 seconds.

Finally, mnemonics is just a tool for memorization, not an ultimate goal. The long-term mastery of the word comes from spaced repetition, using in context and other methods that require a deeper analysis of the word. In other words, mnemonics simply starts the process, and usage finishes it.

Although mnemonics has proven valuable in forward recall, many language learners have found mnemonic strategies to be ineffective for backward recall, i.e. remembering the original word through its translation. The problem is that, unlike in forward recall, the translation is not verbally connected to the keyword, and thus, cannot trigger any pathway to recall the original word. Or else, the definition leads to the mental scene, but not necessarily to the keyword. Therefore, the process halts halfway, leaving the individual unable to remember the scaffold that led to the foreign word. The probable solution would be saying the foreign word out loud several times, while holding its image and meaning on mind. Also, combining mnemonics with repeated exposure to the foreign word and embedding the original word in a sentence could help reduce backward recall issues (Watanabe, 1997; Sagarra & Alba, 2006).

There is a concern that mnemonics provides only for a superficial meaning of the word, and does not allow a deeper analysis, leading to shallow learning. In other words, while recalling the form, the learner might not really internalize the new concept on a broader level (Craik & Lockhart, 1972). It should be noted that deep conceptual understanding does not come solely from mnemonics, which is a memory method in the first place. However, deep processing of a

new concept becomes possible once other methods, such as analysis in context and the connection with other word classes, as well as synonyms and antonyms, are integrated with mnemonics. If mnemonics store only the form in our head, then elaborative encoding patches up the hollows in our tapestry of memory, putting the word in perspective. This kind of approach ensures deep processing which helps with the knowledge of subtle nuances of new words.

Steve Cauffman states in one of his YouTube videos that he learns 100 words every day, and one comment mentions the statement above, reluctant to believe. The author considers it befitting to insert Steve's reply, along with her thoughts on this. "I do not study them. I add them to my reservoir of words that I can recognize. This enables me to read more, listen to more, and eventually my knowledge of these words will improve", says Steve. Indeed, learning a lot of words so fast can evoke disbelief, making the result feel less deserved. This is because many learners are used to repeating word over and over to learn, and it would take much more time and effort to learn words this way. However, as can be observed from what he says, Steve does not solely depend on learning the words to be able to produce them. There are more aspects to it, such as repeated exposure, mnemonics integration in speaking and writing, i.e. active engagement and practical application, which further help to reinforce the new word's form and meaning (Paquinol & Canete, 2025).

There have been several studies, the results of which have not supported mnemonical method of learning (Levin et. al., 1979; Hell & Mahn, 1997). Almost all the body of research that suggests mnemonics did not prove to be much effective involves adults, or learners who are somewhat proficient in the language being learnt. In one experiment conducted by van Hall and Candia Mahn, the results inside the proficient group were surprising: the rote learner's performance surpassed that of the keyword learners. This phenomenon is known in science as 'expertise reversal effect', meaning that techniques that help beginners may help less or even hinder advanced learners (Kalyuga, Ayres, Chandler, & Sweller, 2003). This can be attributed to the fact that proficient learners already have a large network of language built in their brains and they rely on vocal rehearsal to store the information. In other words, a new information will find its way directly to the mental lexicon through phonological rehearsal instead of mnemonic 'bridge' that decodes the information into a mental image. In this case, mnemonics only increases the cognitive load instead of reducing it, and thus becomes an obstacle in the learning process.

Despite certain challenges with the use of the method, mnemonics stands poised to improve learners' language proficiency, especially in the early stages. As the article demonstrates, the keyword method's effectiveness is not limited to certain word classes, and can be incorporated into other strategies to take full advantage. It should be taken into account that every learner can manipulate the method to suit their interests, and embellish their visual or verbal mnemonics in the ways they are likely to remember.

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