

MEMORY. INFORMATION STORAGE TECHNIQUES FOR SIMPLIFYING WORK

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The article focuses on optimization of memory processes in order to simplify tasks and perform actions that require memorization of a large amount of information. Various mnemonics techniques are described, in particular, the method of loci, acrostic technique, chunking, peg word technique, and elaborative rehearsal. The analysis of materials on the topic is supported by empirical findings. Methods to improve the memory process are identified and their effectiveness is tested in an experiment among SB BSU students.

Key words: types of memory; memorization; mnemonics; mnemonic techniques; method of loci; chunking; peg word technique.

Introduction. Memory is a vital component of human life. Currently, there is a growing demand for optimization of memory processes in order to perform actions that require memorization of a large amount of information. Understanding the patterns of memory can contribute to improving the quality of educational and professional activities. The topic is relevant for all spheres, including business and management, as it helps to recognize and apply memory-enhancing strategies and simplify memorization. Research objectives are to identify possible methods to improve the memory process and assess their effectiveness. To do so, we have studied literature on the topic; conducted a survey and an experiment among a group of students; and analyzed the results obtained.

Memory and its types. Memory is the basis of human abilities, a condition of teaching, acquisition of knowledge, and formation of skills. Memorization is a process of memory that captures, traces, introduces new elements of sensation, perception, thought, or experience into the system of associative relationships [1].

Physiological studies of memory reveal three types of memory: sensory, short-term and long-term. American scientists Richard Atkinson and Richard Shiffrin developed one concept, describing short-term and long-term memory as a collaborative, interconnected activity.

The transition of information from short-term to long-term memory is associated with a number of features. By making a conscious effort, repeating the material, you can keep it in short-term memory for a longer period than a few dozen of seconds. In this way, it is possible to transfer to long-term memory the amount of information that exceeds the individual short-term memory. This mechanism is the basis of memorization through repetition [2].

Mnemonics, the system of techniques that improve memory, was first mentioned in Cicero's treatise «De oratore» («About the orator»). A poet, Simonides,

was to perform a lyrical poem at the feast arranged by the noble Thessalian Scopas. Informed that two young men were waiting for him in the street, the poet came out, and at this very moment, the roof of the dining hall collapsed. Scopas' and his guests' bodies could not be recognized by their loved ones in order to properly bury them. Simonides remembered the order in which people were seated at the table, and this allowed him to recognize all the dead. According to Cicero, the case prompted Simonides the principles of the art of remembering [2].

Thus, you should keep in mind the picture of some places and set mental images of memorable objects there. The order of the places will keep the order of the objects; the images of the objects will mean the objects themselves.

Mnemonic techniques are memory aids that help us organize information for encoding. They are especially useful when we want to recall larger bits of information, e.g. steps, stages, phases, and parts of a system. Such rules relate a set of objects that do not have an apparent logical link to another set whose structure is logically clear or easy to remember. Links are to elements of a familiar environment - a house with its rooms or a public place with visible buildings. This strategy uses visualizations, spatial memory, and familiarity with the environment to recall information quickly and efficiently. It is called the method of loci, or the memory journey, or the memory palace technique.

Another technique, Acrostic technique, is a sentence developed to help retrieve letters which represent something that needs to be remembered. The sentence is a catchy way to make the information more meaningful and easier to remember [2]. For example: Here is a mnemonic for remembering the new list of planets (post-Pluto): *My Very Educated Mother Just Served Us Nuts* - Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.

Acronyms are words developed from the first letter of words that are to be remembered, for example, the acronym HOMES could be used for the Great Lakes: *Huron, Ontario, Michigan, Erie, Superior*.

Mnemonic strategy of chunking requires organizing information into manageable bits or chunks. Chunking is useful when trying to remember dates and phone numbers. Instead of trying to remember 5205550467, you remember the number as 520-555-0467 [2].

Another mnemonic device is called the peg word technique - forming a vivid image of what you want to remember and imagining it interacting with your peg words. For example, for remembering items, you might imagine a large gun (the first peg word) shooting a loaf of bread, then a jar of peanut butter inside a shoe, then large bunches of bananas hanging from a tree, then a door slamming on a head of lettuce with leaves flying everywhere. The idea is to provide good, distinctive cues (the weirder the better!) for the information you need to remember while you are learning it.

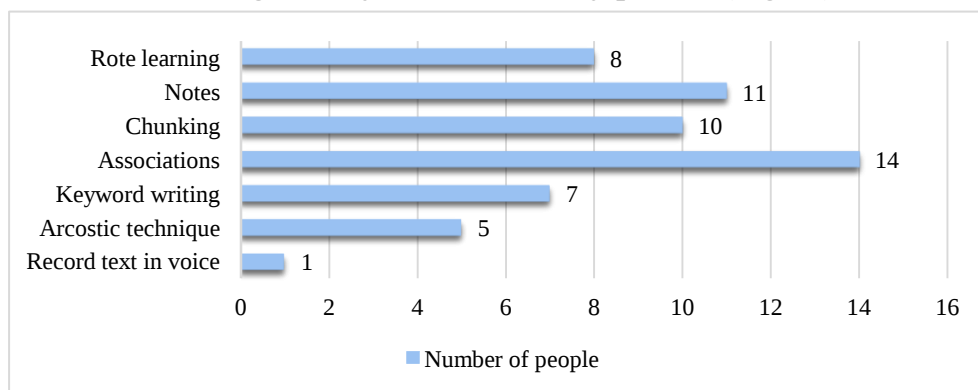
You could also enhance memory by using elaborative rehearsal: a technique in which you think about the meaning of the new information and its relation to knowledge already stored in your memory. For example, you could remember that 520 is an area code for Arizona and the person you met is from Arizona. This would help you better remember the 520 prefix. If the information is retained, it goes into long-term memory [2].

By encoding the information with an emotional valence, you may efficiently recall it, and the memory trace may be more vivid allowing more details to be accurately remembered. The more vivid or unusual the mnemonic, the easier it is to remember. The key to using any mnemonic successfully is to find a strategy that works for you.

Empirical findings. A questionnaire survey was conducted among students and graduates via Google Forms, which incorporated memorization tasks along with multiple-choice questions. Besides, another experiment was carried out in person in a group of students.

Out of 20 people who took part in the first survey, 80 % were first-year students. One of the tasks was the awareness test video, where the participants were to count the passes made by the team in white. As anticipated, the majority (80 %) answered correctly. However, only 20 % noticed the moonwalking bear in the background, while the majority (70 %) did not notice it, and 10 % sensed with peripheral vision that the crowd was increasing, but failed to notice the bear. That is, when paying attention to perform a specific task, people are reluctant to focus on other things shown. Thus, the more we focus on the desired information, the better this information is retained.

The preferable methods of memorizing information used by SB BSU students have been defined in the survey. The top three are associations (14 people out of 20), using notes (11 people), and chunking (10 people). Other frequently used methods are rote learning, acronyms or a memory picture (Figure).



Preferred methods of memorization

The experiment was conducted among a group of 10 people with the aim to determine the efficiency of a memory process using chunking and peg word technique. The students were informed beforehand of the method used. Later, they were

required to memorize a series of 20 digits for three minutes and then reproduce them on a piece of paper. The experiment showed that 6 out of 10 students had achieved the desired goal successfully, while the rest of them reproduced half of the numbers required. Those who memorized the numbers benefited from a well-structured sentence of ridiculous words.

The experiment helped to identify two key points. First, when memorizing monotonous information (a set of digits), creativity is vital - the more interesting and ridiculous are the associations, the more effectively the reproduction is in the future. Secondly, the success of storing information lies primarily in the chosen method. Namely, mnemonic techniques are individual and require a special check of suitability for each person.

Conclusion. The analysis shows that mnemonic techniques are actively spread among students together with a growing interest in improving memorization process. Mnemonics substantially enhances the ability of a person to remember, store and reproduce any kind of information. Thanks to various techniques discussed, everyone can work with a lot of information in education, work, business and everyday life. What is needed is a focus on the desired type of information to memorize, finding the suitable mnemonic technique, the consistent implementation of the method and the continuous maintenance of acquired skills.

It is necessary to conclude by saying that the study focused on the analysis of memory and memorization in terms of students' skills and is subjective, limited to SB BSU context only.

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