

TIME MANAGEMENT AND STUDY SKILLS GUIDE FOR IMPROVING ACADEMIC PERFORMANCE

SEBASTIAN VAIDA*, LUCIAN BRÎNZEI

Babeș-Bolyai University, Cluj

Abstract

Managing responsibilities in a limited time and using cognitive resources in an efficient way, to maximize performance, are a set of, not only desirable, but also necessary skills in our current society. The studies that assess these skills for different age groups and educational levels support this need. Thus, we propose, based on the support of scientific studies in the field of educational psychology, a guide of learning and time management. In the case of time management, we focus on defining goals as well as on prioritizing and organizing activities. In terms of learning skills, we first focus on how to write down relevant information, then on organizing said information into meaningful units, and finally, on a method to facilitate its retention in the long-term memory. This approach has the goal to maximize the potential improvement of the subject's academic performance.

Cuvinte-cheie: metoda Cornell, strategii studiu, scopuri SMART, managementul timpului.

Keywords: Cornell method, mind maps, study skills, SMART goals, time management.

1. INTRODUCTION

The importance of studying and improving study and time management skills is justified by the possibility of avoiding certain negative effects, usually brought by ignoring these variables. Starting with study techniques, El Meysarah (2015) proposes that the inability to develop a method of memorizing and taking notes effectively are some of the main reasons why students lack the understanding of the necessary class materials.

In the case of time management, the studies declare difficulties in organizing personal time, this being true both in the case of undergraduate and even doctoral students. Wilson and Onquegbuzie (2003, cited in Behnam, Jenani & Ahangari, 2014) show, in the latter case, that the factors that were listed as prevalent in inducing anxiety were the amount of study material, the difficulty of the material, the number of projects related to each course and personal time management. In the

* Babeș-Bolyai University, Cluj Napoca, Faculty of Psychology and Educational Sciences, Republicii Street No 37, 400015, Cluj, România; E-mail: sebastianvaida@psychology.ro.

case of 198 undergraduate students, Sannsgiry and Sail (2006, cited in Behnam *et al.*, 2014) positively correlate student's perception of the amount of work they have to do, and the perceived ability to manage them, with test anxiety and poor academic performance. According to Hatos and Pop (2019), out of a sample of 498 people, extracted from three universities in Romania, the percentage of students thinking of dropping out of the university they were enrolled in is between 9.8% and 25.2%. Analysing the variables that could lead to these results, the authors concluded that the school curriculum and the socio-economic status of students do not explain the obtained results. Some of the proposed variables that could explain these percentages are the social integration of the student in the academic environment, motivation and interest in the chosen field and time management, such as accomplishing academic tasks and maintaining job attendance during the semester. In the study of Stăiculescu and Ramona (2018, p. 1) a "report on the state of higher education in Romania shows that between 2014 and 2015 the average duration of academic attendance was 1.2 years", only a third of the students (35.5%) finishing their undergraduate studies. The authors propose as explanatory variables of this phenomenon, the academic goals, perceived academic and social support and the academic skills of the students.

2. THE COGNITIVE PATTERNS BEHIND LEARNING

To facilitate the process of learning and managing personal responsibilities of students, this paper aims to teach practical methods of study and time management, supported from an empirical point of view. Defining learning is however a problematic issue, due to the wide applicability of the concept. Thus, we consider that it cannot be said that learning has a general definition, but a variety of specific definitions. In the case of academic learning, as an informal definition, we could assume that the focus is on the integration of semantic, theoretical information in the long-term memory of the subject, to use it in a practical manner. Banikowski and Mehring (1999) theorize that memory is not only a basic concept of learning, with a role in storing, organizing, and connecting information, but it is also the only method to attest the presence of semantic information. We further refer to the necessary theoretical basis that we follow in choosing the study techniques. According to the information processing model, "semantic memory is mentally organized in networks interconnected by ideas, called schemes (schemata). Thus, information is processed, interpreted, and stored in a way that can be later updated" (Voss & Wiley, 1995 cited in Banikowski & Mehring, 1999). One of the purposes of study techniques is to facilitate the recall of information. According to the processing level model, the more a study technique "focuses on the details of a stimulus, the more, the information, needs to be processed in depth, thus its chances to be recalled and successfully updated are increasing" (Bower & Karlin, 1974, cited in Banikowski & Mehring, 1999).

3. HISTORY OF TIME MANAGEMENT

For the first time, the concept of time management was used in business, in “The Principles of Scientific Management” by Frederick Winslow Taylor, published in 1911, which researched the optimal way to implement training and distribution of rewards to employees (Albert, 2018). In the case of academic performance, Macan (1994), Powell (2004) and Sansgiry (2006) (cited in Jinalee & Singh, 2018) included as relevant factors, for the definition of time management, the ability to select goals and establish priorities, the ability to plan, and to follow relevant study techniques. Covering them under the same umbrella, Lay & Schouwenburg (1993) proposed what are referred to as “behavioural clusters” that aim to facilitate productivity and minimize stress. Incorporating multiple principles, in addition to some already mentioned, Classens (2009, cited in Čiarniene & Vienazindiene, 2014) proposes the following. First, is that time requires a goal to be directed at, for example, towards academic performance, and secondly, that there should be a focus on the practical approach, referring to techniques that involve optimal use of time, such as time assessment, planning and monitoring behaviour.

Time assessment measures the temporal resources and the limits within which the subject can perform his tasks. Planning refers to the definition of goals, their prioritization, and their categorization. Monitoring allows keeping track of a trend of activities, as well as analysis of potential errors (Čiarniene & Vienazindiene, 2014).

4. RECOMMENDED METHODS OF LEARNING

The Cornell method of note-taking was developed by Walter Pauk, a professor at Cornell University, in 1940 (Pauk & Owens, 2010). This method consists of dividing a sheet of paper into three segments. On the upper-left side of the sheet, keywords, abbreviations, schemes, drawings can be used, to underline important concepts. On the upper-right side, the student will summarize definitions or other important and relevant information. The benefit of this method is the constraint on the space that can be used to take notes, which guides the process of information selection (Akintunde, 2013). Finally, at the bottom of the page, the student is advised to use a method that tests information retention, for example, a quiz. Some of the positive aspects of the technique are the ability to keep the user focused on important tasks, taking notes in an organized style, requiring significant cognitive resources. At the same time, the structure of those resources offers the possibility to condense and reformulate the information in an easy to manage way, which leaves room for individual autonomy. Regarding the negative aspects, the technique requires a long time of planning and caution on what needs to be included as vital information (Musywaroh, 2017).

A comparative study (Akintunde, 2013), between the Cornell method, Verbatim (word-for-word writing), and retention by underlining and outlining, concludes that the recommended method (Cornell) is superior in terms of improving task performance. The testing methods for each of the groups were free-recall, recognition, and essay. The most important differences discovered in the experiment are the correlations between the level of malleability of the technique (in terms of information systematization and the level of processing) and the possibility of multi-tasking during the task. In addition to underlining and Verbatim, additional steps in the Cornell method such as adding keywords, creating a summary, or solving questions based on the notes, not only develops critical thinking but also facilitates the internalization of information in the long-term memory in an autonomous way, which helps the understanding of the material in a faster way than simply copying and arranging information (Anjarsit & Adnan, 2017; Akintunde, 2013). Although there are other studies that support the usefulness of the Cornell technique in various contexts (Musyawaroh, 2017; Hayati & Jalilifar, 2009), there are also results that challenge its efficiency (Quintus *et al.*, 2012). In the study conducted on a class of high school students, Quintus (2012) compares the Cornell technique with a method chosen by the students, for most of which was their own note-taking strategies. Following the experiment, no notable results were observed between groups, concluding that a method with which the student is already accustomed can be as effective as an empirically supported technique.

Acronyms refer to abbreviation of certain phrases or words, with the goal of improved recalling of complex information. They are most often found in combination with other variations, such as acrostics – through which a sentence is constructed with the initials of each word to be remembered. Although the subject was the object of many research experiments, their isolated effect on academic performance is still insufficiently documented (Lubin & Polloway, 2016). In any case, compared to other categories of mnemonic techniques, linguistic ones can be used regardless of subject. However, a major limitation is the number of abbreviations that can be made until the information can no longer be efficiently stored in memory. Therefore, it is recommended to use chunking, or “grouping individual information into extensive meaningful units” (Banikowski & Mehring, 1999). Chunks are used in abundance when it is necessary to compress a substantial amount of information. As an example, in the case of a therapeutic system, The ABC of Albert Ellis, the initials gradually symbolize the processes of the therapeutic approach. “A” stands for the Activating event, “B” for the Beliefs about the event, “C” for the Consequences (behaviour) caused by the beliefs. Nemati’s (2013) study addresses, in a comparative matter, 7 study strategies, including underlining, use of mental images, grouping and acronyms. Its purpose is to observe the improvement of the retention of linguistic information in various student groups. The experiment shows that although other strategies such as highlighting information help retention in the short term, the use of acronyms is a more effective choice for retaining information

in the long run. At the same time, together with other language strategies, “acronyms are evaluated as effective in the case of students with learning disabilities” (Demirdag, 2014).

The mind map method was created by Tony Buzan, published in “The Mind Map Book” in 1993, and described as a metacognitive tool, which, according to Silver (2013, cited in Sweet *et al.*, 2017), allows reflection on one’s own approach to thinking and organizing information, resulting in a deeper processing of information. In terms of design, mind maps involve the construction of interconnected diagrams integrating concepts and images. The method consists in deciding on a central idea or theme and extending it to adjacent topics. Thus, a mental map can comprise an infinity of connections between concepts (Jain, 2015). The method can also be used in conjunction with other techniques, such as flash cards. Concomitant and efficient use of these strategies involves avoiding simple recitation and transcription of targeted information. Instead, it is recommended to transform the notes into meaningful schemes, integrated into a mental map and test retention through questions (Sweet, Blythe, & Carpenter, 2017). The method was validated in terms of pedagogical utility as an individual study technique, both for middle and high school students, as well as for students who studied arts (music), social sciences and medicine (Jain, 2015; Çoban & Selçuk, 2017; Rosciano, 2015).

The method of spaced learning is based on the spacing effect, which was first studied in the 19th century by Hermann Ebbinghaus and included in “Memory: A Contribution to Experimental Psychology”, published in 1885. Quoting Ebbinghaus: “A significant number of repetitions, distributed over time, is more advantageous (for memorization) than merging them into a single instance of time” (Ebbinghaus, 1913 quoted in Smolen, Zhang, & Byrne, 2016). The conclusion expressed by the author is based on experiments of memorization of lists of syllables, but current studies extend the results to concepts and word lists (Smolen *et al.*, 2016). The distributed study method is based on 3 theories: The encoding variability theory, the study-phase retrieval theory, and the deficient-processing theory. According to Smolen and collaborators (2016):

- **The encoding variability theory** assumes that memory is influenced by the context in which the encoding is done. Often, when study sessions are spread over a longer period, it is very possible that the environment will be different for each of the sessions. Thus, the chance of recalling information, encoded in a similar environment, increases.
- **The study-phase retrieval theory** shows that presenting stimuli in a spaced way is more efficient than merging them, to consolidate memory, because each study session reactivates the information created and stored by the previous session. Combining the information into a single study session can be the situation where the previous information is still present in the memory. In this situation, reactivation is impossible, because the information is still present in the working memory, and thus long-term memory consolidation has a lower chance of success.

- **The deficient-processing theory** shows that in the case of combined learning, a tendency to get used to stimuli is created. At the same time, the subject's attention decreases, and the chances that the information will be processed in depth and retained in the long-term memory decrease. The method has biological support. The results of conditioning experiments on animals (mice) show that the administration of electrical stimuli, with a spacing of 30 minutes between sessions, produce behaviour changing effects lasting up to 24 hours, with detectable residual effects that last up to 4 days after the mentioned sessions.

We observed that the main interest, so far, was the study of the effects of distributed study sessions over short periods of time, addressing the ability to memorize and recall various lists of words or artificial language concepts. Thus, the time between sessions, in the respective experiments, does not exceed the interval of a couple of minutes, making the generalization of the results impossible, when it comes to more extended periods of time (Khoii & Abed, 2017; Delaney, Verkoeijen, & Spirgel, 2010). However, as will be explained in detail, the method of distributed study has shown promising results when used together with other techniques like self-testing through flashcards.

Self-testing. Self-testing is viewed as one of the best methods for in-depth learning. It involves writing a question and an answer on the front and back of a sheet of paper. Although the method seems simple, most students, according to various studies (Kornell, 2009; Senzaki, Hackathorn, Appleby & Gurung, 2017), use it in a counterproductive way. First, the theory of distributed study is not considered by students when constructing, and using, the sets of flashcards. It should be noted that, in this case, the distributed study focuses on the distance between the cards to be learned and not between the study sessions themselves. In an experiment (Senzaki *et al.*, 2017) two groups are trained according to the following instructions. The first group is assigned to the combined study method and uses four smaller sets of cards while the second experimental group has only one set available and was instructed to use the distributed study method. The result was in favour of the distributed study group. According to the authors, the more time passes between repetitions and the more often the repetition is done, the greater the chances of memorizing the information. In the group that used distributed study, if we have 20 cards, the repetition of an item (card) is dependent on going through the other 19 items, so a larger spacing, whereas, in the case of the combined study group, the cards being divided into significantly smaller sets, one card is separated only by 4 other items. The tendency to create sets comes from the need to separate the items considered memorized by those that have yet to be memorized. The merged learning process creates the idea that the information has been retained so many times, that the student chooses not to repeat the ones he already solved correctly. This habit is detrimental to the retention of information in the long-term memory, but is assessed in a positive way by students, mainly because it requires fewer time resources. Secondly, based on the same principle,

the allocation of temporal resources to the study sessions is made very shortly before an evaluation, and, in this case, the learning process involves mainly cramming. Studies on cramming the information before an evaluation show poorer results in terms of in-depth learning (Kornell, 2009).

Senzaki *et al.* (2017) offers an alternative to this situation by combining the flashcard method with paraphrasing and learning by examples. In a typical situation, the student begins by noting the term and definition, then continues by repeating the information several times to retain the information, but the authors recommend that after memorization, students reformulate the definition in their own terms and create examples to illustrate what they memorized. To adapt the method to technological opportunities, various studies (Dizon & Tang, 2017; Sage, Krebs & Grove, 2019) compared the classical method, in which concepts are written on paper, with the situation in which cards are created in a digital space, for example, on a tablet. The conclusion of the comparisons is that both have similar effects on memory performance.

As we have seen, science-based learning techniques can be applied to a variety of subjects and learning contexts, but it is also useful to keep in mind that all of them are influenced by factors that have been proven to mediate the effect on overall performance. Some of the variables are past learning habits, the compatibility between the addressed subject and the chosen technique, and gender. For example, although studies have shown the effectiveness of mental maps in the medical field (Rosciano, 2015), another technique that is just as effective, and perhaps more effective in biology and medical related subjects, is drawing the information that needs to be retained (Joewono *et al.*, 2018). Regarding the differences between genders, based on Reilly's (2019) comprehensive study on the issue, we can at least suppose that there is a significant difference in verbal and spatial skills between males and females. Women show superior verbal learning skills and abilities, while in terms of visual-spatial skills, the observed results were significantly higher in the case of male subjects (Reilly, 2019).

5. CONCLUSIONS

The concept of academic performance is a multi-factorial one, and is dependent on both the external context, such as time-consuming day-to-day responsibilities or unexpected events, and the individual's particular traits and abilities, such as genetic factors, time management and learning skills. Lastly, although there are a multitude of learning and time management techniques, it is necessary to choose them according to the existing empirical support, as well as to the practical application that best suits the individual and the subject at hand.

What we hope the reader takes out from this paper, no matter the learning techniques he chooses to use, is that the best way to retain information is when it is

structured. As we have seen structure can take many forms, from physically arranging information, with the Cornell note taking method, to chunking information into a manageable form using linguistic techniques like Acronyms. Time management techniques are not an exception from this rule, no matter the granularity of the structuredness of the chosen method. We hope the reader finds these tips and methods helpful on their own or as building blocks for self-made techniques, that better suit the reader's needs.

Received: 12.01.2021

REFERENCES

1. AKINTUNDE, O. O., *Effects of Cornell, verbatim and outline note-taking strategies on students' retrieval of lecture information in Nigeria*, Journal of Education and Practice, **4**, 25, 2013, p. 67–73.
2. ALBERT, C., *Brief History of Time Management and Why It's Crucial to a Happy Life*, 2018, Articol disponibil pe www.calendar.com.
3. ANJARSIT, Y., & ADNAN, A., *The use of Cornell note taking technique to improve listening comprehension of senior high school students*, Journal of English Language Teaching, **6**, 1, 2017, p. 9–15.
4. BANIKOWSKI, A.K., & MEHRING, T.A., *Strategies to enhance memory based on brain-research, Focus on Exceptional Children*, **32**, 2, 1999, p. 1–16.
5. BAST, F., *Crux of time management for students*, Resonance, **21**, 1, 2016, p. 71–88.
6. ČIARNIENĖ, R., & VIENAŽINDIENĖ, M., *The conceptual model of time management*, In Book of Proceedings, 2014, p. 42–48.
7. ÇOBAN, S., & SELÇUK, E., *The effect of mind mapping technique on students' achievements in music lesson and on their attitudes towards the mind mapping technique*, Eğitim ve Bilim, **42**, 190, 2017, p. 423–435.
8. DELANEY, P.F., VERKOEIJEN, P.P., & SPIRGEL, A., *Spacing and testing effects: A deeply critical, lengthy, and at times discursive review of the literature*, In Psychology of learning and motivation, Academic Press, **53**, 2010, p. 63–147.
9. DEMIRDAG, S., *Effective teaching strategies and student engagement: Students with learning disabilities*, International Journal of Teaching and Education, **2**, 3, 2014, p. 168–175.
10. DIZON, G., & TANG, D., *Comparing the Efficacy of Digital Flashcards versus Paper Flashcards to Improve Receptive and Productive L2 Vocabulary*, The EuroCALL Review, **25**, 1, 2017, p. 3–15.
11. EL MEYSARAH, C., *Listening of news through cornell note-taking system in a univeristy critical listening class*, RETAIN, **3**, 1, 2015, p. 1–6.
12. HATOS, A., & POP, A., *Commitment to the goal of completing studies in higher education: Dropout risk of the students from social science specialization from three Romanian public universities*, Journal of Adult Learning, Knowledge and Innovation, **3**, 1, 2019, p. 12–19.
13. HAYATI, A.M., & JALILIFAR, A., *The Impact of Note-Taking Strategies on Listening Comprehension of EFL Learners*, English Language Teaching, **2**, 1, 2009, p. 101–111.
14. JAIN, S., *The comprehensive study of how mind mapping technique helps to understand concepts and ideas in science teaching*, International Journal of Scientific and Research Publications, **5**, 12, 2015, p. 284–286.
15. JINALEE, N., & SINGH, A.K. *A descriptive study of time management models and theories*, 2018, p. 141–147.
16. JOEWONO, M., KARMAYA, I., WIRATA, G., WIDIANTI, I., & WARDANA, I., *Drawing method can improve musculoskeletal anatomy comprehension in medical faculty student*, Anatomy & cell biology, **51**, 1, 2018, p. 14–18.

17. KHOIL, R., & ABED, K.F., *Effects of equal spacing, expanding spacing, and massed condition on EFL learners' receptive and productive vocabulary retrieval*, Pixel, Proceedings of ICT for language learning (10th Ed.) ICT for language learning, 2017, p. 500–504.
18. KORNELL, N., *Optimising learning using flashcards: Spacing is more effective than cramming*, Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition, **23**, 9, 2009, p. 1297–1317.
19. LUBIN, J., & POLLOWAY, E.A., *Mnemonic instruction in science and social studies for students with learning problems: a review*, Learning disabilities: A contemporary Journal, **14**, 2, 2016, p. 207–224.
20. MACAN, T.H., *Time management: Test of a process model*, Journal of applied psychology, **79**, 3, 1994, p. 381–391.
21. MUSYAWAROH, B., *The effectiveness of using cornell note-taking strategy toward students' reading comprehension (an experimental research at the second grade of smpn 1 bojonegara)*, (doctoral dissertation, universitas islam negeri "sultan maulana hasanuddin" banten), 2017, p. 11–29.
22. NEMAT, A., *Vocabulary learning strategies: A short way to long term retention*, Linguistics and Literature Studies, **1**, 1, 2013, p. 8–14.
23. PAUK, WALTER & OWENS, ROSS J.Q., *How to Study in College* (10 ed.), Boston, MA: Wadsworth, ISBN 978-1-4390-8446-5, Chapter 10: "The Cornell System: Take Effective Notes", 2010, p. 235–277.
24. QUINTUS, L., BORR, M., DUFFIELD, S., NAPOLEON, L., & WELCH, A., *The impact of the Cornell note-taking method on students' performance in a high school family and consumer sciences class*, Journal of Family & Consumer Sciences, **30**, 1, 2012, p. 27–38.
25. REILLY, D.H., *Sex and sex-role differences in cognitive abilities*, i, 2019, p. 1–166.
26. ROSCIANO, A., *The effectiveness of mind mapping as an active learning strategy among associate degree nursing students*, Teaching and Learning in Nursing, **10**, 2, 2015, p. 93–99.
27. SAGE, K., KREBS, B., & GROVE, R., *Flip, slide, or swipe? Learning outcomes from paper, computer, and tablet flashcards*, Technology, Knowledge and Learning, **24**, 3, 2019, p. 461–482.
28. SANSGIRY, S.S., & SAIL, K., *Effect of students' perceptions of course load on test anxiety*, American journal of pharmaceutical education, **70**, 2, 2006, p. 1–6.
29. SENZAKI, S., HACKATHORN, J., APPLEBY, D.C., & GURUNG, R.A., *Reinventing flashcards to increase student learning*, Psychology Learning & Teaching, **16**, 3, 2017, p. 353–368.
30. SMOLEN, P., ZHANG, Y., & BYRNE, J.H., *The right time to learn: mechanisms and optimization of spaced learning*, Nature Reviews Neuroscience, **17**, 2, 2016, p. 77–88.
31. STĂICULESCU, C., & RAMONA, R.N.E., *University dropout. Causes and solution*, Mental Health: Global Challenges Journal, **1**, 1, 2018, p. 71–75.
32. SWEET, C., BLYTHE, H., & CARPENTER, R., *Mind Mapping: A Technique for Metacognition*, Teaching with Metacognition, 2017, p. 1–4.

REZUMAT

Gestionarea responsabilităților într-un timp limitat și utilizarea resurselor cognitive într-un mod eficient, pentru a maximiza performanța, reprezintă un set de abilități nu numai de dorit, ci și necesar în societatea actuală. Studiile care evaluează aceste abilități pentru diferite grupe de vârstă și niveluri educaționale susțin această nevoie. Astfel, propunem, pe baza studiilor științifice din domeniul psihologiei educației, un ghid al învățării și al gestionării timpului. În cazul gestionării timpului, ne concentrăm pe definirea obiectivelor, precum și privind prioritizarea și organizarea activităților. În ceea ce privește abilitățile de învățare, ne concentrăm mai întâi pe modul de notare a informațiilor relevante, apoi pe organizarea informațiilor respective în unități semnificative și, în cele din urmă, pe o metodă de facilitare a păstrării acestora în memoria pe termen lung. Această abordare are scopul de a maximiza îmbunătățirea potențială a performanței academice a subiectului.

