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AN INVESTIGATION INTO MEDICAL TERMINOLOGY LEARNING STRATEGIES: A CASE STUDY OF THIRD-YEAR STUDENTS AT CONSTANTINE-3 UNIVERSITY

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Abstract: English serves as the global lingua franca and primary language of scientific communication; therefore, its acquisition becomes important, this is especially true in the medical field, since most new technologies and publications are available in English. The aim of the present study is to explore the various learning strategies used by medical students to learn medical terminology and to identify the most and least frequently employed ones, in order to determine the extent to which students are interested in medical vocabulary learning strategies as reflected in their choice of learning techniques. To this end, this research used a survey based on Schmitt's (1997) taxonomy of vocabulary learning strategies grouped into Determination, Social, Memorization, Cognitive, and Metacognitive. The survey was distributed online (Google Forms) to 32 medical students at Constantine University-3 and quantitatively analysed using SPSS 23. Data analysis revealed that some strategies are used more than others by medical students. The most frequently used strategies are the less cognitively complex ones; these include drawing on context**,** decomposing new medical terms into prefixes, roots, and suffixes, looking up the unknown word's meaning from peers, remembering the written form, and using cognitive strategies such as repeating the word out loud. The results have important implications for teaching English for Medical Purposes (EMP) and vocabulary learning strategies (VLS) at the start of a university program. Incorporating explicit VLS instruction into EMP curricula can empower students to take more responsibility for their own language learning.

Keywords: Medical terminology; Constantine University-3; medical students; VLS; EMP; Schmitt's taxonomy; strategy use frequency

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1. Introduction

In the realm of language acquisition, vocabulary learning is essential, constituting a considerable percentage of the overall language learning. Indeed, developing a strong vocabulary luggage is crucial for general comprehension and successful communication (Viera, 2017). A strong vocabulary enables one to convey ideas more precisely and understand others more effectively. Indeed, weak vocabulary will hinder both receptive skills—listening and reading—and productive skills—writing and speaking (Lee, Kwon & Lee, 2021). Hence, vocabulary enrichment investment is at the heart of language mastery.

In the context of language learning, learner-centered pedagogy has recently become the most prominent approach (Hachemi & Hadavi, 2014; Boyadzhieva, 2016). This approach motivates learners to become autonomous and to take charge of their own language learning process (Olaya, 2018). Autonomy in vocabulary learning signifies not solely tracking the pace of language learning progress but also understanding how to employ vocabulary learning strategies (Džuganova, 2019). In other words, awareness and the thoughtful employment of vocabulary-learning strategies represent one method by which to achieve autonomy in language learning. Vocabulary learning strategies can be defined as the diverse techniques that language learners utilize to learn and retain new words. As Cameron (2001) states, "by vocabulary learning strategies, we mean the actions that learners take to help themselves understand and remember vocabulary" (p. 92). Investing in these techniques can prove fruitful in enriching one's general vocabulary knowledge as well as academic-specific vocabulary, the latter of which is less applicable to daily life when compared to general vocabulary (Kwon & Lee, 2021).

In the domain of medicine, the swift progress made in science and technology has resulted in a corresponding expansion of growth in medical terminology. As Džuganová (2013) noted, "medical vocabulary is an open and continually evolving phenomenon, with its units often acquiring new meanings" (p. 129). The frequent emergence of new medical terminology can thus be attributed to the necessity of naming new diseases, symptoms, and new equipment found (Džuganova, 2013). The technical nature of medical terminology poses a formidable impediment to learning, especially to students studying English as a foreign or second language, as it is excessively technical and complex. Moreover, most medical discoveries and publications are predominantly in English (Sinadinović, 2013; Gherzouli, Nasri, & Angal, 2025). In this respect, it appears reasonable to argue that building medical vocabulary competency through the strategic use of vocabulary learning strategies (VLS, Hereinafter) has become a necessity for medical students. In fact, acquiring medical terminology competency not only guarantees understanding of English-based medical literature but also assures efficient communication in medical contexts, in accordance with the requirements and expectations of the future career in the healthcare sector.

The primary language of instruction for medicine in Algeria is French. However, medical students and doctors have also demonstrated strong interest and positive attitudes toward learning medical English. Boumaza (2023) concluded that specialist doctors are eager to learn English for academic engagement at the international level. The reason is that English is the world's most influential language. Familiarity with medical terms not only opens the door to research but also provides the potential to work or study abroad. The current study seeks to explore the various medical terminology learning strategies used by medical students and to identify the most and least commonly employed ones. The findings are expected to reveal the extent to which students are engaged with medical vocabulary learning strategies, as reflected in their choice of learning techniques. Ultimately, the results aim to inform the design of more effective ESP or Medical English courses that enhance students' efficiency and autonomy in learning and using medical vocabulary.

2. Literature Review

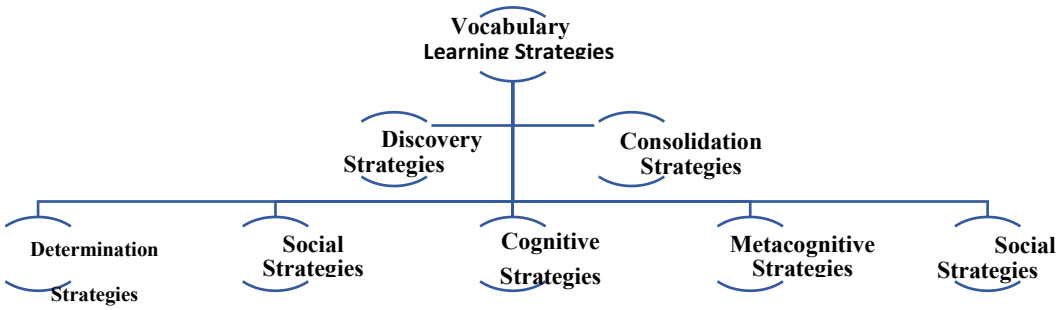
Vocabulary learning strategies serve as a medium through which language learners can learn new words and expand their lexical repertoire. These linguistic tools are a fundamental component of the language learning process, as language production and comprehension rely heavily on word knowledge. Given their importance, different scholars have introduced taxonomies to organize and demonstrate the diverse types of strategies used in a variety of contexts (Bytheway, 2015). One pioneering work in this area was introduced by Schmitt (1997).

2.1 Theoretical Framework

Schmitt's (1997) taxonomy is considered one of the most influential and comprehensive classifications of vocabulary learning strategies (Talbi, 2020). It is heavily influenced by Oxford's (1990) taxonomy of language learning strategies. However, Schmitt (1997) adapted it to suit the context of vocabulary learning. Essentially, Schmitt's (1997) framework consists of 58 strategies, which are categorized into two main groups: discovery strategies and consolidation strategies. Discovery strategies refer to the methods that learners employ when they first encounter an unfamiliar word. Consolidation strategies are used to enhance the retention of the newly learned words.

The discovery strategies can be further delineated into two categories: social strategies (SOC) and determination strategies (DET). SOC strategies entail collaborating with others, such as requesting a teacher or peer for the word definition or synonym. Conversely, DET strategies imply that the learner makes independent decisions to learn new words without requiring other assistance, e.g., via a dictionary or context clues. (Schmitt, 1997)

The consolidation strategies are classified into cognitive strategies (COG), metacognitive strategies (MET), memory strategies (MEM), and social strategies (SOC). COG strategies involve the mechanical process of learning vocabulary, such as using a notebook or note-taking app. MET strategies enhance learners' awareness of their own learning processes, allowing them to plan and monitor their progress, for instance, by using tests to assess their lexical repertoire. MEM strategies create connections between new and existing knowledge, like linking a word to its synonym or antonym. SOC strategies include practicing new vocabulary words through social interactions, such as participating in



Facebook chat groups to practice the language.

Figure 1:

Schmitt's (1997) Taxonomy of VLS

2.2 Previous Studies on Medical Learning Strategies

Vocabulary acquisition has historically been marginalized and received little attention from researchers (Meara, 1980), despite its significance in language learning, as the inadequacy of vocabulary can adversely impact communication (Alqahtani, 2015). However,

two decades ago, vocabulary acquisition came back into vogue and has drawn increasing attention across different disciplines (Kök & Canbay, 2011). The present section is dedicated to summarizing the most important previous studies relevant to the current study on the use of VLS by medical students.

Yang (2002) conducted a study examining the strategies used for learning medical terminology by nursing pre-professionals in Taiwan and how proficiency affects their use. The researcher distributed a questionnaire to 89 students and chose a curriculum-specific achievement test to evaluate their proficiency. The results showed that nursing students frequently use strategies such as repeating the written form of a word, orally repeating the word, and utilizing bilingual dictionaries. It was also found that proficiency levels play a significant role, as more capable students tend to use a greater number of strategies than their less competent peers.

Similarly, Rogulj and Čizmić (2018) investigated the use of vocabulary learning strategies (VLS) among Croatian medical students. The study also aimed to determine the effect of gender and proficiency level on learning medical vocabulary. A questionnaire and a five-task achievement test that measured the knowledge of medical vocabulary among the students were used to gather data. The quantitative analysis showed that Croatian medical students employed various VLS to expand their vocabulary knowledge. The most frequently employed strategies were the bilingual dictionary and word lists. The results indicated that male students employed fewer strategies than females, but performed better than their female counterparts on the vocabulary test. Lastly, the research established that low-, middle-, and high-scoring medical students employed VLS without statistically significant differences.

Alahmad (2024) explored the use of strategies to learn medical terminologies by Egyptian nurse students. He chose to explore vocabulary strategies through the use of two main tools: a medical terminology test and a questionnaire. The findings reported that nursing students prefer to use cognitive strategies, memory strategies, and determination at the expense of social and metacognitive strategies. Memory strategies are the most preferred by high-level students, metacognitive strategies are their least used strategies, and cognitive strategies are most favoured by low-level students. And social strategies are the least used strategies.

In a similar fashion, Lee and Kwon (2024) investigated the VLS utilized by Korean medical students to acquire medical terminology and general English vocabulary. The data for their study were collected using a survey adopted from Schmitt's (1997) taxonomy of vocabulary strategies, which was distributed to 109 medical students. Their findings showed no statistically significant difference in the strategies employed to learn either medical terminology or general vocabulary. It was found that the students commonly utilized strategies such as using online dictionaries, breaking down the root of words, taking notes, comparing to familiar similar words, and using contextual clues.

Prior research has tackled the use of vocabulary learning strategies in healthcare contexts with varied research tools and from different vantage points. In the Algerian context, however, medical students' use of medical vocabulary learning strategies has been accorded comparatively less attention. The scholarly interest has, instead, been placed on investigating general vocabulary learning (e.g., Benyahia, 2015; Arab, 2015; Sadek & Mebtouche Nedjai, 2022). In an effort to bridge this gap, the current research aims to investigate the different strategies employed by Algerian medical students at the University of Constantine 3 to enhance their medical lexical repertoire. Ultimately, the study seeks to generate data that can inform the design of more effective ESP or Medical English courses, thereby enhancing students' efficiency and autonomy in learning and using medical vocabulary.

3. Methodology

3.1 Research Questions

Given the importance of vocabulary learning strategies (VLS) in the process of learning medical terminology, this study aims to investigate the following research questions:

1. What are the various learning vocabulary strategies employed by third-year medical students to acquire medical vocabulary?
2. Which are the most and least used strategies employed by third-year Constantine University medical students in the learning of medical terms?

3.2 Data Collection

The data for the study were collected exclusively through a closed-ended questionnaire adopted from Schmitt's (1997) taxonomy of VLS. The version used in this study has been adapted to the context of medical terminology and consists of 19 strategies (see appendix). The questionnaire was sent online using Google Forms to 32 third-year medical students at Constantine Medical School. Students were asked to respond to each statement regarding the frequency of its use, on a scale from rarely (1) to always (5). The data collection process lasted 14 days (12th June to 26th June).

4. Results

This section is mainly focused on data analysis. The data obtained from the questionnaires were computed using the statistical package SPSS 23. The results were given in means and standard deviations to provide a clear statistical analysis of the data.

4.1 Determination Strategies

Table 1 below outlines the different strategies that medical students use to determine the meaning of unfamiliar medical terms. These strategies include the use of contextual clues, word segmentation into prefix, root, and suffix components, and the utilization of bilingual and monolingual dictionaries. The strategies are ordered in the following table from most commonly used to least commonly used according to their mean score.

Table 1.

Determination Strategies Used by Medical Students

Determination Strategies	M	SD
I rely on context to infer the meaning of unfamiliar words.	3.97	0.64
I divide the new medical word into prefix, root, and suffix. (e.g. electrocardiogram: *electro*/*cardio*/*gram)*	3.50	0.91
I use the monolingual medical dictionary English–English.	3.41	1.13
I use the bilingual medical dictionary English–Arabic.	2.22	1.15

Note. M = mean; SD = standard deviation.

Based on the mean scores in Table 1, the most frequent strategy among this group is guessing the meaning of the word using contextual cues, with a mean score of (3.97). This technique might be preferred as it reduces cognitive load. Given the inherent difficulty of medical vocabulary, inferring meaning from context is a less demanding and more time-efficient strategy. This also could be attributed to the flexibility and adjustability of the medical students' skills in understanding the meaning of unknown words.

Interestingly, the second most common strategy is word decomposition into its component parts, with a mean score of (3.50). This vocabulary strategy seems to be favoured because it helps learners memorize the structure of medical terms since most medical terms are comprised of Latin and Greek root words, prefixes, and endings. Through an understanding of these word components, learners would be able to better grasp the meaning of newly encountered medical terms. Moreover, this strategy may be particularly beneficial for determining the meaning of compound words, since knowledge of the individual components can facilitate comprehension of the whole term. Finally, it can function as both a time-saving technique and a practical alternative when a dictionary is unavailable.

The third most utilized strategy is employing a monolingual dictionary, which was scored similarly (3.41) to the previous strategy. While, the use of bilingual dictionaries appears not to be preferred by these medical students, as it ranked as the least used strategy in this category (2.22). This choice may reflect the students' strong need to acquire English medical terms without falling back on their mother tongue, as well as their desire not to oversimplify the terms. Indeed, bilingual dictionaries frequently overlook the nuances and discipline-specific meanings of medical terms, providing direct translations that can strip words of their contextual accuracy. Monolingual dictionaries, as opposed to bilingual dictionaries, provide definitions and exemplifications that enhance the actual application and context of the learned words.

4.2.1 Social Strategies

Table 2.

Social Strategies Used by Medical Students

Social Strategies	M	SD
I ask my classmates about the meaning of the new word.	3.06	1.01
I communicate with native speakers who have expertise in the medical field to test and practice my medical terminology knowledge with them.	2.25	1.19
I form study groups with my classmates to practice and reinforce the meanings of newly learned words.	2.19	1.17
I seek help directly from the professor. (e.g., I ask him for the translation of the word)	2.13	1.10

Table 2 displays the results obtained from the analysis of social strategies. It contains four main strategies, ranked according to their mean score. The most frequently used strategy is asking a classmate for the meaning of an unfamiliar word (3.06); this preference could be explained by the fact that medical students are socially inclined and comfortable seeking assistance from peers. In fact, this tendency could reflect a supportive learning environment where peer interaction plays a vital role in vocabulary expansion.

The three least-used strategies have nearly the same scores. *I communicate with native speakers who have expertise in the medical field to test and practice my medical terminology knowledge with them*, *I form study groups with my classmates to practice and reinforce the meanings of newly learned words* and *I seek help directly from the professor (e.g., I ask them for the translation of the word)*, with scores of 2.25, 2.19, and 2.13, respectively. Communication with native speakers and participation in study groups appear to be less frequently practiced by medical students, possibly due to the belief that learning medical terminology is a personal responsibility. The infrequent use of the "seeking help from a professor" strategy, which ranked as the least used, may be explained by the fact that medicine in Algeria is primarily taught in French; therefore, professors may not always feel confident using English in academic discussions.

4.3 Memorization Strategies

Table 3.

Memorization Strategies Used by Medical Students

Memorization Strategies	M	SD
I memorize the written form of the word.	3.78	1.03
I try to pronounce the newly learned medical word aloud to remember it.	3.75	1.27
I group the new words together in an organized way, which helps me to remember them whenever it is necessary. (E.g., respiratory system conditions: "pneumonia," "bronchitis," and "asthma".	3.59	1.01
I represent the visual form of the word (its written form) in my mind so I can remember it.	3.59	1.01

The findings of the Memorization category indicate that the strategies recorded approximately the same scores. The most preferred strategies were memorizing the written form of the new words and pronouncing them aloud to remember them, with scores of (3.78) and (3.75), respectively. This This appears to suggest that medical students place high priority on writing and speaking abilities because these two abilities are crucial for good communication in the health care context. In other words, communication within hospital settings—whether between doctors or with patients—must be precise and clear, since even minor alterations in wording or pronunciation may pose a risk to the patient's safety.

The strategies *"grouping new words in a systematic way to remember them*" and "*visualizing the visual form of the word in the mind to remember it*" both recorded a mean score of 3.59. Although these strategies ranked last in this category, their relatively high mean scores still indicate their effectiveness in learning medical terminology. This seems to suggest that medical students have a predominantly visual learning preference, as they tend to recall newly learned terminology more easily when it is visually presented. Overall, the findings in this category suggest that memorization strategies were generally preferred by the respondents, which may have greatly supported their learning process.

4.4 Cognitive Strategies

Table 4.

Cognitive Strategies Used by Medical Students

Cognitive Strategies	M	SD
I keep pronouncing the new learned word multiple times out loud so that I can remember it long term.	3.38	1.21
I use a "notebook" or "note-taking applications" to record the newly learned words.	2.88	1.43
I create sentences or monologues in my mind with the new words I've learned.	2.56	1.07
I keep writing the word several times, so I can remember it for a long time.	2.56	1.26

The findings in the cognitive category indicate that the strategy of repeating the new learned words many times in order to remember them in the long run achieved the highest frequency of use (3.38). This also corroborates the previous findings under the Memorization category that medical students prefer learning the verbal form of new words, perhaps for effective communication within the clinical setting. This helps guarantee a clear pronunciation of medical jargon, which is known to be difficult to articulate. Most importantly, it is widely recognized that verbal repetition is a key strategy that assists in

boosting the activation of long-term memory (Plater et al., 2023). The more frequently a word is repeated, the greater the chance of retaining it in memory.

The second most utilized strategy within this category was maintaining a notebook or note-taking software, which was at (2.88). Though this strategy has been proven effective in many studies (e.g., Hirschel & Fritz, 2013; Atma & Khelfa, 2018; Afifah & Nuryadin, 2023), medical students may perceive it as energy-consuming, as they often do not have enough time to review the words repeatedly. Writing sentences or monologues in one's mind with the new words learned, as well as rewriting the words repeatedly, both shared the lower score of (2.56) and proved to be the least utilized strategies within this category. This may be attributed to the fact that medical students often study under strict time constraints while learning a vast amount of unfamiliar terminology. That is, techniques such as sentence writing and repeated word rewriting, while potentially valuable, may be perceived as time-consuming and therefore lower on their list of priorities compared to more efficient techniques like pronunciation practice and electronic note-taking. This may explain why they tend to prefer easier and quicker strategies, such as verbal repetition.

4.5 *Metacognitive Strategies*

Table 5.

Metacognitive Strategies Used by Medical Students

Metacognitive Strategies	M	SD
I use social media like Facebook to practice and test my medical vocabulary knowledge.	3.19	1.03
I watch and listen to everything related to Medical English: TV programs, videos on YouTube, and medical podcasts**.**	3.16	0.98

The MET category encompasses two vocabulary learning strategies that can be considered among the most innovative techniques currently used in vocabulary learning. These are: *"I use social media such as Facebook to practice and test my medical vocabulary knowledge"* and *"I watch and listen to everything related to Medical English, including TV programs, YouTube videos, and medical podcasts."* Both strategies recorded nearly identical mean scores of 3.19 and 3.16, respectively, suggesting that students perceive social media as an effective platform for practicing newly learned words in an interactive manner. Furthermore, the findings indicate that students also value listening to and viewing multimedia content as a means of expanding their medical English vocabulary.

5. Discussion

This section is dedicated to summarizing the results of this study, discussing the findings in relation to other studies, and answering the research questions. The quantitative analysis of the respondents' questionnaires yielded to significant findings. Interestingly, it was revealed that Constantine-3 University medical students employ several vocabulary learning strategies, namely determination strategies (e.g. using context to infer the meaning of unknown terms), social strategies such as asking for help from classmates), memorization strategies (For instance, memorizing the written form), cognitive strategies (such as repeatedly pronouncing newly learned words), and metacognitive strategies (such as listening to and watching all content related to English). These findings provide an answer to the first research question, which inquires about the different types of strategies that medical students use to expand their medical vocabulary.

5.1 Most Used and Least Used Strategies

Table 6.

Most and Least Used Strategies by Medical Students

Category	Most Used Strategy	Least Used Strategy
Determination Strategies	I rely on context to infer the meaning of unfamiliar words. (3.97) I divide the new medical word into prefix, root suffix. (*3.50)*	I use the bilingual medical dictionary English-Arabic. (2.22)
Social Strategies	I ask my classmates about the meaning of the new word. (3.06)	I ask help from the professor (2.13)
Memorization Strategies	I memorize the written form (3.78) I try to pronounce the newly learned medical word aloud to remember it. (3.75)	I represent the visual form of the word (its written form) in my mind so I can remember it. (3.59) I group the new words together in an organized way which helps me to remember them whenever it is necessary. (3.59)
Cognitive Strategies	I keep repeating the new learned word multiple times out loud so that I can remember it long term (3.38)	I keep writing the word (2.56) Creating monologues using the newly learned words (2.56)
Metacognitive Strategies	I watch and listen to everything related to Medical English: TV programs, videos on YouTube, and medical podcasts. (3.16)	

The quantitative analysis results contribute to the answer for the second research question, which concerns the most and least utilized strategies employed by medical students. As demonstrated in the table above, the most commonly utilized strategies within the determination category are relying on contextual clues and dividing words into parts. Relying on contextual clues to decipher the meaning of unfamiliar terms can be helpful for medical students, as it saves time and provides valuable support when dictionaries or other reference resources are unavailable or difficult to access, corroborating the findings of Aljamal (2018), which indicated that medical students depend on various contextual clues at the word and sentence levels to deduce the meanings of unfamiliar terms. Furthermore, Zhou (2021) emphasized the importance of using this technique, as it enhances vocabulary knowledge and reading skills by ensuring smooth reading without interruption. More importantly, it indirectly helps learners understand how to use words grammatically within sentences. Additionally, the division of words into their component parts was also identified as a preferred strategy among medical students, which supports Banay's (1948) view that segmenting words is an effective technique for learning medical terminology. Similarly, Abdullah (2013) argues that since most medical terms are either compounds or derivatives, breaking them down into their constituent parts can greatly facilitate the acquisition of medical jargon.

In contrast, the use of bilingual English-Arabic dictionaries was found to be the least utilized strategy within this category. The infrequent use of this strategy could be explained by students' preference for monolingual dictionaries, as these provide contextual explanations rather than direct, oversimplified translations into the mother tongue, as bilingual dictionaries do. This result aligns with Alahmad's (2018) observation that the employment of bilingual dictionaries was among the least common approaches adopted by high-proficiency Iraqi medical students. However, this finding appears to be inconsistent with Seddigh's (2012)

study, which revealed that medical students preferred bilingual dictionaries, making them among the most frequently used strategies. The researcher therefore urged instructors to encourage the use of monolingual dictionaries, given their greater effectiveness in expanding students' medical vocabulary repertoire compared to bilingual ones.

Regarding the second category, it was found that medical students tend to ask their classmates as a form of socialization when they do not know the meaning of a word. This result is again inconsistent with Seddigh's (2012) study, which found that medical students were not enthusiastic about asking others for the meanings of unfamiliar words or working collaboratively in groups to learn new vocabulary. However, asking for help from professors, as one might expect, was not a frequently used strategy. This can be explained by the fact that medicine is taught in French in Algeria, so the older generation of professors is not as well-acquainted with English.

With regards to memorization techniques, the respondents reported that they give more importance to memorizing the spelling and pronunciation of new words than to depicting their visual appearance in their minds and categorizing related words in a systematic manner. These results are similar to the results reported by Cui and Kaur (2023), who also observed that recalling the spelling and correct pronunciation of words are among the most popular techniques, pointing to the necessity of both the written and spoken forms to learn effectively. A similar result was reported by Hafsari et al. (2025), who stated that practicing correct pronunciation of newly learned vocabulary is considered an effective technique for memorizing words and enhancing their retention. This inclination to the written and spoken word is not surprising since these two modes complement each other and are not only used in memorization but also proper communication, especially in a medical environment where even slight errors in a word can lead to issues, for example, when documenting a patient's symptoms or medication.

Concerning the cognitive category, respondents acknowledged that they prefer keeping pronouncing the words they have newly learned rather than keeping writing them or creating monologues using the newly learned words, as these strategies may be time-consuming. This result is consistent with the findings of Li (2019) and, Cui and Kaur (2023), who reported that Chinese medical students favoured repetition as it helps them retain medical terminology more effectively. It is also partially consistent with Yang (2005), who found that nursing students preferred both written and verbal repetition

Finally, in the metacognitive category, both strategies appear to be preferred by medical students. The respondents reported that they tend to use social media platforms, such as Facebook, to practice and test their medical vocabulary knowledge (3.19), as this allows for mutual interaction. Similarly, they also reported watching English podcasts or videos related to medicine (3.16), though with a slightly lower mean score. The result that social media presents a good environment for students to practice their vocabulary knowledge is congruent with the findings of Desta et al. (2021), who reported that medical students believe that social media contributed well to the improvement of their vocabulary proficiency. In the same vein, this result corroborates the findings of Alharthi et al. (2020), who demonstrated that social media platforms serve as useful and efficient resources for motivating students, increasing their engagement, and facilitating the process of learning new vocabulary.

6. Conclusion

The current research sought to investigate third-year medical students' use of Vocabulary Learning Strategies (VLS) in learning medical vocabulary at the University of Constantine-3, Algeria. The research partially employed Schmitt's (1997) taxonomy as the main theoretical basis and quantitative data analysis using SPSS 23. The data analysis revealed that the students of the University of Constantine-3 employ various types of VLS in order to master and learn medical terminology. They are categorized into Determination (DET), Social (SOC), Memory (MEM), Cognitive (COG), and Metacognitive (MET) strategies. The results, in fact, reflect students' awareness of the variety of strategies available for learning medical jargon and their interest in learning English.

The findings showed that medical students would rather employ some strategies than others. Most frequent for third-year medical students are those less cognitively demanding strategies, such as using context to remember unknown words (DET), breaking down new medical words into their prefixes, roots, and suffixes (DET), asking friends for the meaning of unfamiliar words (SOC), memorizing the spelling of words (MEM), pronouncing the newly learned medical words to remember them (MEM), repeating the words aloud to facilitate retention (COG), and using social media platforms like Facebook to practice and test their medical vocabulary (MET).

Regarding the least used strategies, the findings showed that medical students tend to use bilingual medical dictionaries (English-Arabic) less frequently (DET), ask for help from professors less often (SOC), rarely resort to visual representation of word forms (MEM), grouping new words in an organized manner (MEM), writing words repeatedly (COG), and creating monologues using newly learned words (COG). Additionally, they tend to watch and listen to less content related to medical English, such as TV programs, YouTube videos, and medical podcasts (MET).

The results obtained have important implications for teaching English for Medical Purposes (EMP) and vocabulary learning strategies (VLS) at the onset of a university program. It may make them become more autonomous as well as boost their progress in learning English better, in preparing them more efficiently for their futures as doctors and researchers in life. Therefore, it is highly recommended that EMP instructors train medical students to effectively use vocabulary learning strategies (VLSs) and encourage them to adopt authentic and innovative techniques and resources for learning medical terminology, such as online learning platforms, AI-based applications, and educational YouTube channels. In addition, students should be made aware of their individual learning styles and guided to select strategies that best align with them. It is also important to raise their awareness of the value of collaboration with classmates and peers outside the university.

A few limitations can be identified for the present study. The sample was relatively small which would reduce the generalizability of the findings on the use of vocabulary learning strategies in medical English. Another limitation was that the research did not assess how factors like gender, age, and language proficiency might interact to influence students' use of vocabulary strategies. Finally, the study may have overlooked some important perspectives, as students were not given the opportunity to report additional vocabulary learning strategies that were not included in the questionnaire. However, this limitation stems from the study's focus on collecting quantitative data through more structured and directed questions.

Therefore, subsequent studies on EMP and VLS need to overcome these constraints through the application of larger and more varied samples of medical students from various universities at the national level. This would be highly beneficial to further develop EMP teaching and aid independent vocabulary learning.

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Appendix

This questionnaire is created to collect data for our study titled **"Exploring Medical Learning Strategies."** The information gathered will be used solely for the study, and your responses will be confidential.

a. "How do you figure out the meaning of new medical words when encountering them for the first time?"

Strategy Name	Always	Very Often	Sometimes	Rarely	Never
1. I divide the new medical word into prefix, root, and suffix. (e.g. electrocardiogram: *electro*/*cardio*/*gram)*					
2. I use the bilingual medical dictionary English-Arabic.					
3. I use the monolingual medical dictionary English-English.					
4. I rely on context to infer the meaning of unfamiliar words. For example, in the sentence "The doctor prescribed antibiotics to treat the patient's infection, which was caused by bacteria," the term "antibiotics" is explained by the surrounding context - it is used to treat a bacterial infection.					
5. I seek help directly from the professor (e.g. I ask him for the translation of the word)					
6. I ask my classmates about the meaning of the new word.					

b. "What techniques do you find helpful in remembering newly learned medical words?"

Strategy Name	Always	Very Often	Sometimes	Rarely	Never
7. I form study groups with my classmates to practice and reinforce the meanings of newly learned words.					
8. I communicate with native speakers who have expertise in the medical field to test and practice my medical terminology knowledge with them.					
9. I represent the visual form of the word (its written form) in my mind so I can remember it.					
10. I group the new words together in an organized way which helps me to remember them whenever it is necessary. (E.g., respiratory system conditions: "pneumonia," "bronchitis," and "asthma".					
11. I try to pronounce the newly learned medical word aloud to remember it.					
12. I memorize the written form of the word.					
13. I use a “notebook” or “note-taking applications”					

to record the newly learned words.					
14. I try to memorize the way the new word is pronounced.					
15. I keep pronouncing the new learned word multiple times out loud so that I can remember it long term.					
16. I keep writing the word several times, so I can remember it for a long time.					
17. I create sentences or monologues in my mind with the new words I've learned.					
18. I watch and listen to everything related to Medical English: TV programs, videos on YouTube, and medical podcasts.					
19. I use social media like Facebook to practice and test my medical vocabulary knowledge.					