

# Research on the Strategy of Improving the Four-level Vocabulary Memory Ability of Medical Students

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## ABSTRACT

Background: Medical students face many challenges in vocabulary learning in the CET-4 exam, such as a large number of professional terms and limited time. Objective: The purpose of this paper is to explore strategies for improving the vocabulary memory ability of medical students at Level 4, in order to help them master English vocabulary more effectively and improve their performance in Level 4 examination. Methods: By analyzing the current situation of vocabulary learning among medical students, this paper proposes a variety of strategies such as categorical memory, associative memory, contextual learning, and root affixation, and verifies their effectiveness through experiments.

**Keywords:** Medical students, CET-4, Vocabulary memory strategies, Elevate research.

## 1. INTRODUCTION

The aim of this study is to explore effective strategies for enhancing the vocabulary retention of medical students in the College English Test Band 4 (CET-4), enabling them to master vocabulary more effectively, improve their English proficiency, pass the CET-4 exam smoothly, and provide support for future medical training and career development. By analyzing the current situation of medical students' vocabulary memory, combining relevant theories and teaching methods, practical and feasible strategies are proposed, and the effectiveness of these strategies is tested, providing scientific suggestions and opinions for medical students' English vocabulary learning.

With the enhancement of China's comprehensive strength, it is moving from a cultural power to a cultural powerhouse[1]. In today's globalized healthcare environment, English has become an important tool for medical communication. The College English Test Band 4 (CET-4) is an important English exam that non-English major college students need to take during their school years[4]. For medical students, having good English proficiency not only helps to acquire cutting-edge medical knowledge internationally,

but also lays a solid foundation for future academic exchanges, international cooperation, and career development. Passing the CET-4 exam is not only a stepping stone for medical students to enter higher academic levels, but also a key indicator for their future career development. Many well-known medical schools, such as the Capital Institute of Pediatrics and China-Japan Friendship Hospital, explicitly require candidates to reach a certain level of English in their enrollment brochures. In addition, participating in international cooperation projects and even being competent for job positions in foreign-related medical institutions after graduation. Therefore, the score of the CET-4 exam often becomes one of the important criteria for measuring the comprehensive quality of medical students, and mastering vocabulary is a key element in improving the CET-4 score. Due to the heavy workload of professional courses and limited learning time, the richness of vocabulary directly affects students' comprehensive abilities such as listening, reading, writing, and translation. How to efficiently memorize English CET-4 vocabulary has become an important challenge for them. Therefore, researching how to design effective vocabulary memory enhancement strategies for medical students has important practical

significance. The theoretical and practical significance are as follows:

### ***1.1 Theoretical Significance***

In today's booming development of higher education nationwide, the National College English Test Band 4 and Band 6 remain the most important and serious English proficiency exams for universities due to their wide scope, high social attention, and reasonable difficulty levels[6]. The English CET-4 and CET-6 exams, as a form of education, have their own value and significance [2]. Enriched the application research of vocabulary memory strategies in specific professional student groups. Preceding scholarly inquiries into vocabulary retention have predominantly concentrated on the ubiquitous college student demographic, while rather diminished emphasis has been placed on medical students, who constitute a cohort distinguished by their unique professional attributes and educational demands. This study proposes methods to address the lack of vocabulary and difficulty in memorization among medical students through in-depth analysis of their learning characteristics and vocabulary retention difficulties in the CET-4 exam.

### ***1.2 Practical Significance***

The College English Test Band 4 and Band 6 is beneficial for cultivating and improving students' good psychological qualities, adaptability, logical thinking, and self-awareness, which are all conducive to enhancing the comprehensive quality of college students[7].

In order to facilitate medical students in their acquisition of a comprehensive vocabulary, it is imperative to furnish them with targeted and efficacious memorization strategies. These methodologies are designed to enhance their ability to retain information within a constrained timeframe, alleviate the cognitive load associated with learning, bolster their confidence in the educational process, and enable them to navigate the complexities of English language proficiency and examination requirements with greater ease.

It helps to improve the comprehensive English application ability of medical students, enabling them to better read medical English literature, participate in international academic exchanges, and adapt to the future international medical work environment, enhancing the international competitiveness of medical talents in China.

To provide reference and inspiration for medical English teaching, teachers can adjust teaching methods and content based on the results of this study, design vocabulary teaching plans that better meet the needs of medical students, and improve teaching quality and effectiveness.

## **2. CHARACTERISTICS OF MEDICAL STUDENTS STUDYING LEVEL 4**

### ***2.1 Advantage of Knowledge Foundation***

Medical students typically possess sharp logical reasoning skills and excellent memory. While studying medical courses, students are required to memorize extensive professional terminology, as well as physiological and pathological knowledge. This memory training helps them to exert their advantages in memorizing knowledge such as CET-4 vocabulary. For example, when medical students memorize the English names of human anatomical structures, they have already accumulated some medical related vocabulary, such as "cardiac" and "pulmonary", which may overlap with CET-4 vocabulary and lay a foundation for CET-4 learning.

### ***2.2 Clear Learning Objectives***

Medical students understand the significance of having strong English proficiency for their future professional advancement. Engaging in the analysis of foreign medical literature, taking part in international academic collaborations, and remaining informed about advancements in medical technologies all underscore the significance of English as a vital instrument. So their learning of CET-4 has a strong utilitarian purpose, and they will pay more attention to practical application abilities, such as the ability to read fragments of English medical literature, rather than just passing the exam.

## **3. ANALYSIS OF THE CURRENT STATUS OF VOCABULARY LEARNING FOR MEDICAL STUDENTS**

### ***3.1 Insufficient Vocabulary***

The majority of medical students possess inadequate English proficiency and have limited opportunities to enhance their vocabulary in English. No matter what kind of English exam,

vocabulary is always the top priority. [3] The CET-4 exam requires mastery of about 4500 commonly used vocabulary, and medical students often devote most of their time to professional course learning, focusing on medical knowledge rather than English vocabulary. Especially for the vocabulary in the CET-4 exam, their accumulation of CET-4 vocabulary is relatively lacking, and coupled with the pressure of medical courses, they may invest less in English learning.

### ***3.2 Limited Study Time***

The educational requirements of medical courses entail challenging and intricate content, comprising theoretical study, practical applications, clinical placements, and various other elements that are comprehensive and intricate, necessitating significant time and effort from students for comprehension and mastery. For example, Knowledge of human anatomy involves memorization of numerous organ structures and names, mastery of various physiological processes and mechanisms is necessary in the field of physiology, and clinical courses such as internal medicine and surgery encompass the diagnosis, treatment, and nursing care of a wide array of diseases. Medical students may encounter challenges in finding adequate time to systematically review and memorize CET-4 vocabulary. This results in relatively less time for medical students to prepare for the CET-4 exam. They must manage their academic studies and CET-4 exam preparation effectively within a constrained timeframe. Medical students are required to attend numerous professional courses weekly, engage in activities such as case discussions, and can only allocate fragmented time for learning CET-4 content.

Medical students frequently encounter substantial academic pressure, particularly during their final years, as they must allocate additional time to prepare for medical exams like the Practicing Physician Qualification Exam, which further limits their opportunities for improving their English language skills. Therefore, medical students have relatively less time left for English learning after completing their professional course learning tasks, especially limited time for memorizing CET-4 vocabulary.

Students typically experience a sense of time constraints while studying for the CET-4 exam, which complicates the task of managing CET-4 vocabulary acquisition.

### ***3.3 Memory Difficulties and High Forgetting Rate***

In order to master CET-4 vocabulary, medical students often resort to rote memorization or traditional mechanical learning methods, such as diligently repeating spelling, pronunciation, and word meanings. Although this method can help them remember a few words in the short term, the memory effect is short-lived and often forgets quickly. Moreover, mechanical memorization is tedious and boring, which can make students feel bored and dampen their learning enthusiasm. Furthermore, when engaging in rote memorization of words, students frequently commit the information to memory individually, neglecting to investigate the interconnections and similarities among words, consequently leading to diminished memory retention.

This method lacks scientific learning methods and strategies, so the vocabulary mastered is not ideal. As a result of insufficient systematic verification and upkeep, numerous students rapidly lose retention of the vocabulary they have acquired.

### ***3.4 Interference of Medical Professional Terminology***

Medical students must acquire a significant amount of medical terminology in English, which varies from everyday vocabulary in terms of origin and structure. Students frequently conflate the vocabulary used in the CET-4 exam with professional terminology, thereby augmenting their cognitive load.

### ***3.5 Limited English Usage Environment***

Medical students have limited opportunities to utilize English in their academic pursuits and daily activities, resulting in inadequate language immersion that may inhibit proper retention of vocabulary.

When learning vocabulary, numerous medical students lack awareness of the significant impact of context on comprehension of vocabulary and memory. They only remember the meanings of words, rather than learning and using them in specific contexts. Therefore, students often find it difficult to accurately understand the meanings of words or how to use them when facing real-life language situations. For example, the word 'run' may have different meanings in different contexts, such as 'run', 'control', and 'run'. If students do not

internalize these meanings in certain contexts, it is easy to be misunderstood.

### **3.6 Lack of Motivation to Learn**

Learning motivation refers to the internal psychological activity that inspires and maintains students' learning activities, and encourages them to continuously strive towards the learning goals set by teachers. [2] Due to the high pressure of studying professional courses for medical students, some students believe that the direct impact of English learning on their professional development is not significant, resulting in a lack of sufficient attention and motivation for learning CET-4 vocabulary. They only consider passing the CET-4 exam as a task to complete, without truly realizing the importance of good English proficiency for their future career development. In addition, some students may experience difficulties and setbacks in vocabulary learning, leading to thoughts of giving up and a lack of perseverance in learning.

## **4. STRATEGIES FOR IMPROVING THE LEARNING OF CET-4 VOCABULARY FOR MEDICAL STUDENTS**

For medical students, their purpose of learning English is relatively clear. Most students hope to meet the standards and requirements of the College English Test Band 4 and Band 6 by studying English, in order to pass the exam [8]. This article proposes the following effective vocabulary improvement methods for medical students in their CET-4 vocabulary learning:

### **4.1 Music Memory Method**

Music memorization is a creative method of learning words using the rhythm and melody of music.

Firstly, there are many songs specifically designed for memorizing English words. The lyrics of these songs typically revolve around a specific theme or category of words. For example, there is a series of songs about the alphabet, where each letter of the alphabet and the words starting with that letter are sung in alphabetical order; In songs such as 'A is for apple, B is for ball', students only need to repeat simple melodies, letters, and corresponding words to easily remember them.

Other songs are based on grammar rules and commonly used vocabulary. To illustrate the

present tense, the song sings simple phrases that reflect that tense at an interesting rhythm, such as 'he works every day, she studies hard', allowing students to become familiar with grammar rules and word usage while listening to the song. The song is performed at an interesting rhythm, accompanied by simple phrases that reflect the tense, such as 'She studied hard.'

You can even create your own music to help remember words. If you like the melody of a popular song, you can adapt the words you want to memorize into the melody. For example, attempt to modify the lyrics of a well-known song to incorporate themes of colors, for instance, "red, yellow, blue, green, so vivid and pristine."

When you listen to this song, your brain becomes active with the rhythm of the music. The melody of music is like keywords that connect words together, making memorizing words no longer dull and boring. In addition, repeatedly listening to these songs can deepen the impression of words in the brain. Just like how you can easily remember the lyrics of a popular song, due to the mnemonic effect of music, the lyrics are more profound in your memory.

### **4.2 Unconscious Memory Method**

Unconscious memory is a simple and effective method of memorizing words. It refers to certain natural methods of memorizing word information without consciously speaking words out loud.

- **Audiovisual background noise:** English radio stations, English movies, and TV series can be used as background noise in daily life. For example, opening an original English documentary while doing housework or resting. Even if your attention is not focused enough on the film, your brain will remember the repeated words. For example, in documentaries such as National Geographic, words such as "species" and "ecosystem" are often mentioned. Even after multiple subconscious encounters, these words will still remain in memory.
- **Prepare reading materials:** Prepare simple English reading materials, such as English comic books or children's books. It's not necessary to read word for word and sentence for sentence, but occasionally flip through and take a look at the words. Words like 'fairy' and 'wizard' will be deeply imprinted in their memory. The

more you watch, the more familiar you will become.

- Language exchange scenario: Engage in English language enrichment activities or cultivate relationships with individuals from diverse cultural backgrounds. Even if you can't remember every precise word they say, your brain will subconsciously absorb commonly used vocabulary and practical expressions. For example, if you are discussing hobbies and interests, words such as "hobby," "collection," and "painting" will repeatedly appear and subtly imprint in your memory.
- Social media platforms on the Internet: follow some social media platforms that regularly publish interesting English content, such as English jokes and English short messages. When browsing these contents, you will see some new words. For example, if you see the word "diplomacy" in an English news article, your brain will learn the word through repeated repetition.
- Word games: In some mobile games, memorizing words is an important component of the game. For example, in word games, players will receive descriptions, partial spellings, or corresponding images of words to guess from. Players may not be aware that they are learning words while enjoying the game, but as they constantly guess and become familiar with new words, they will subconsciously remember them.
- English puzzle and card game: Partake in English puzzles with friends or family, which include words and corresponding images on the puzzle. Throughout the process of solving the puzzle, the brain subconsciously registers the association between words and images, even though the primary focus remains on the puzzle itself. Or engage in a word card game wherein one side of the card presents words and the opposite side presents their corresponding definitions. Through the process of flipping through the cards and matching them, the words will also be unconsciously memorized.

### ***4.3 Improving Reproducibility Method***

Improving repetition is a method of enhancing memory by increasing the frequency of words appearing in various situations.

How to do intensive rehearsal?

- Create a structured study schedule by establishing the daily word memorization target. Please transcribe the following information on the card: key terms on the front, their definitions, sample sentences, and correlated phrases on the reverse side. Upon arising in the morning, dedicate 15 to 20 minutes to reading the cards in order to comprehend the significance of the words.
- Incorporate words into daily life: Write down the words you want to learn on sticky labels, then attach them to the edge of your computer monitor, refrigerator door, mirror, or any other prominent surface. In this way, you will often see these words in your daily life. In this way, you will see these words more frequently in your daily life, increasing the likelihood of repeating them unconsciously. For example, if you see "brush; brush" in the mirror, you can associate it with "brush; brush" when imagining brushing your teeth, thereby enhancing your memory.
- Utilize multimedia resources, such as audio and video, during the learning process. For example, when listening to English songs, if there are words you have just learned in the song, it will deepen your impression through auditory perception. When watching English movies or dramas, pay attention to the dialogue between the actors. Once a newly learned word appears, we can easily understand its meaning and remember it. We can also subscribe to the official account or channel of English learning, which will regularly push some English articles, vocabulary explanations and other knowledge. When we read or watch these contents, the words we learned will reappear, realizing the reproduction.

In the process of learning, we use multimedia tools, such as audio, video, etc., to deepen the impression of multimedia, such as listening to English songs. If English songs contain words we just learned, then we will be more impressed. If we watch English videos or TV series, when actors talk and the words we just learned suddenly appear, the meaning of the word will be easier to understand. We may also subscribe to the official English learning account or channels, which regularly share articles about English vocabulary. This content serves as a helpful tool for reinforcing our memory retention through consistent exposure to words.

Matters that need attention include:

- Maintain continuity: We also have the option to subscribe to the official English

learning account or channels, which consistently share articles pertaining to English vocabulary. This material functions as a useful resource for enhancing our memory retention by providing consistent exposure to vocabulary. Only by constantly connecting and reviewing can memory never decline.

- Diversified review methods: To avoid a single presentation, it is more important to explore different levels of vocabulary through multiple channels and forms. This can not only increase interest, but also help to associate the connotations of words from multiple perspectives and angles.
- Focus on the interpretation of the context: Words are not only the meaning of spelling, but also the meaning they contain in different contexts. When reviewing words, it is important to combine them with specific contexts, such as example sentences, articles, etc. This will be more profound and beneficial for you to accurately use words in practical use.

According to the Ebbinghaus forgetting curve, over time, a person's memory of something will gradually fade away. Therefore, after learning words, it is necessary to review them multiple times in a timely manner to constantly refresh the memory of the words; The time interval for reviewing vocabulary should be gradually extended in order to achieve better results in direct expression.

- Engaged interactive application: After learning a word, Consult the index and carefully incorporate the newly acquired word into practical use and communication, as well as engaging in interactions with others through the application of the word. This is a combination of learning and application. In communication with others, you can discover areas where you have not mastered vocabulary in practice, enabling you to better understand the correct usage of words and your own shortcomings, and receive timely correction; In the process of using a word, changes in its usage are made as influenced by relevant factors, and a profound change in the connotation of a word is observed, which has the greatest effect on the recorded effect.

By improving the repetition method of memorizing words, continuously increasing the exposure and frequency of use of words, it can effectively improve the memory effect of words

and make it easier for you to master English vocabulary.

#### ***4.4 Situational Learning Method***

Situational Learning refers to a learning method that helps students better understand and master vocabulary by learning and using words in actual contexts, or a learning approach based on specific situations, problems, or tasks, emphasizing the use of real or simulated situations to guide learners in knowledge construction and skill improvement. Context refers to the linguistic environment, which includes both linguistic and nonverbal factors [10]. The core concept of this learning method is to place the learning content in practical application contexts, enabling learners to practice, explore, and reflect in complex and meaningful scenarios, thereby better understanding and mastering knowledge.

Medical students in the field of medicine can master the relevant CET-4 vocabulary knowledge by studying English materials and analyzing medical records related to medicine. Learning vocabulary in practical environments can help you gain a deeper understanding and practice of these words, ensuring that you can use them more proficiently in exams.

The key characteristics of adopting situational learning methods are as follows:

- Real scenario: Establish an educational environment that closely replicates real-world scenarios to facilitate the acquisition of practical experience in the application of knowledge by learners.

The task driven mode motivates learners to deal with specific environmental problems through tasks or problems, thereby enhancing their professional abilities in practical operation and problem-solving.

- Cooperative learning mode: This mode emphasizes teamwork. While learners work together to complete various tasks, they also learn from each other, interact and support each other.
- Reflection and Summary: By reflecting on the learning process, learners are encouraged to summarize their experiences and lessons learned, thereby enhancing the effectiveness of knowledge internalization.
- Situational support: Offer learning support tools or resources to assist learners in

attaining enhanced learning experiences within challenging contexts.

#### **4.5 Associative Memory Method**

The associative memory method uses a means of assisting memory through the mutual connections between objects, which has shown extremely high effectiveness in practical applications. It is constructed based on the working principle of our brain. When we combine new data with existing knowledge, experience, or familiarity, our brain can more easily encode and store this information for faster extraction when necessary. This can make our memory process more engaging and efficient. Through continuous practice and the use of associative memory techniques, we can not only enhance our memory, but also more effectively face various memory related issues in learning, career, and daily life. Whether as students or adults in learning, associative memory can fully demonstrate its uniqueness, helping us easily memorize knowledge points that are difficult to recall, and allowing us to freely swim in the ocean of academia.

The associative memory method helps students establish connections during the memory process by linking newly acquired CET-4 vocabulary with familiar medical terms or commonly used vocabulary. For example, in the medical field, the commonly used word "diagnosis" can be associated with the fourth level verb "diagnose" to deepen students' understanding. Another example is "ambulance", which can be thought of as "I cannot die". Through this interesting homophonic association, students can not only remember the pronunciation and spelling of this word, but also its meaning related to first aid. In addition, it is possible to deepen memory by associating vocabulary with the medical environment, such as "stethoscope", imagining doctors using it to examine patients, which helps to remember the word more effectively.

Thanks to this combination, vocabulary memory ability is greatly improved.

In learning and life, we often need to memorize a large amount of information, but traditional memory methods are often inefficient and boring. In this case, associative memory is like a magical key that opens the door to effective memory.

Some grammar rules can be memorized through association. For example, when memorizing English tenses, the present tense is a stable daily

state, like the sun rising and setting every day, and the compound past tense allows us to imagine what happened in the past.

##### **4.5.1 Generate Clear and Detailed Visual Representations**

Try to transform the information that needs to be memorized into concrete and vivid images, because the brain's ability to remember images is usually stronger than that of text. For example, to remember the words "sun" and "flower", we can imagine a vivid picture of the sun shining on beautiful flowers, making the picture as clear as possible in our minds.

##### **4.5.2 Creating Distinctive Connections**

The more peculiar and exaggerated the association, the more impressive it can be. A new celestial scraper is so auspicious that it reaches the moon and ticks the stars with its stop a miracle of the city, a giant miracle! (This new skyscraper is so huge, towering to the moon, teasing the stars with its top. It is a true behemoth in the urban landscape, a huge miracle!) Lenovo: Exaggerating the height of the skyscraper to touch the moon, using this fantastic scene to reflect the meaning of "gigantic", making memories more vivid and interesting.

##### **4.5.3 Utilizing Narratives to Establish Connections**

Compile multiple pieces of information that need to be memorized into a story. For example, to remember the words "arbitrary," "rank," and "complete," you can create a story called "Those ranking share completely arbitrary." By connecting these words through the plot of the story, it helps with overall memory.

##### **4.5.4 Integrating Emotional and Sensory Stimuli**

Incorporating emotions and sensory experiences such as touch, smell, and hearing into the process of association. For example, when memorizing the word "seaside", we can not only imagine the image of the sea, but also feel the blowing of the sea breeze (touch), smell the salty taste of the seawater (smell), and hear the sound of the waves (hearing). This comprehensive association can make the memory more profound.

This peculiar association can break through conventional thinking and make memories more solid.

#### **4.6 Root and Affix Method**

Analyzing word roots and affixes is an effective method of memorizing words, especially for medical students. Many words in medical English are derived from Latin or Greek, and mastering common roots and affixes (such as "bio", "-logy", etc.) can make difficult words easier to remember. You will be able to remember more words in a shorter amount of time.

The fundamental components of words are roots and affixes, and examining them can aid in comprehension and retention of vocabulary. For example, 'cardio' represents 'heart', and '-logy' represents 'research'. Therefore, 'cardiology' is 'cardiology'. By learning common roots and affixes, mastering their meanings and word grouping rules, medical students can analyze their structures and infer their meanings when memorizing words, thereby improving their memory. Meanwhile, the root and affix memorization method can also help students expand their vocabulary, as one root or affix can form multiple related words.

The root is the core of a word, containing its basic meaning. For example, the root "vis" means "to see", which makes it easy to form the word "visible". The adjective suffix "-ible" means 'capable of...'. Since 'can' means 'able to do', 'visible' means 'visible'.

There are prefixes and suffixes. The prefix usually changes the meaning of a word. For example, the prefix 'un-' represents 'no'. 'un-' becomes 'unhappy'. The suffix mainly changes the nature of the word. Taking '-tion' as an example: 'educate', '-tion' is usually added after the verb to form a noun. When adding '-tion' after a verb to form a noun, such as 'education', the word changes from a verb to a noun.

Understanding some common roots and affixes can help you quickly understand the meaning of unfamiliar words. For example, the root "port" represents "receive, carry", the root "im-" in "import" represents "bring in" and "import", the root "ex-" represents "take out", the root "export", the root "ex-" represents "export", and the root "ex-" represents "leave" or "send".

We can also expand our vocabulary by remembering the root of the word 'bio'. When we

encounter words such as 'biology', 'biography', 'biography', 'biography', 'biography', 'biography', 'biography', and 'biography', we can expand our vocabulary. Biography, biography, extinction of life, extinction of life, extinction of life, etc., the speed of understanding and memory will be faster.

#### **4.7 Natural Phonics**

Natural phonics is a technique in English learning that helps learners associate letters (letter combinations) with pronunciation.

As a basic rule, natural phonics includes the pronunciation of the letters themselves, such as the "a" in "cat". It also includes the pronunciation of letter combinations, such as "ee". In words such as "bee" or "see", "ee" is usually pronounced as /i:/.

There are several reasons why this method is important. For beginners, natural pronunciation can help them quickly master the pronunciation of simple words and enhance their confidence in learning English. This method also helps learners pronounce words when they see them. For example, if they see the word 'book' and know that the pronunciation of 'b' is /b/, the pronunciation of 'oo' is /u:/, and the pronunciation of 'k' is /k/, then they won't have any problem pronouncing it. In addition, natural pronunciation also helps with spelling words. In fact, once you become familiar with pronunciation rules, you can try pronouncing words based on their pronunciation.

There are many ways to master natural pronunciation during the learning process. For example, interesting nursery rhymes. Words containing 'a' and pronounced as /æ/, such as 'cat', 'hat', and 'mat', will appear multiple times in the text. Words containing 'a' and pronounced as /æ/, such as 'cat', 'hat', and 'mat', appear many times in the text. The singing style and rhythm of these words are lively, and students can learn pronunciation while listening. In addition, there are specialized textbooks on natural pronunciation that systematically explain pronunciation rules and include many vocabulary and exercises to consolidate the knowledge learned.

#### **4.8 Classification of Mind Mapping Patterns**

It revolves around a theme and radiates different branch categories outward, with each branch further subdividing related words. For example, with "animals" as the theme center, it can be branched



into "mammals," "birds," "reptiles," "aquatic animals," and so on. Within the mammalian classification, there exists further subdivision of specific animal terms such as dog, cat, pig, and cow.

There are several benefits to classifying memories in this way. Firstly, words can be stored in an orderly manner in the brain for easy retrieval and memory. Consider the theme of "animals" as an illustration; words associated with each animal will be organized within the mind map structure as opposed to being haphazardly stored. Secondly, classification can be used to find connections and patterns between words. For example, different animal names may have similar spelling and pronunciation patterns; The pronunciation of 'sheep' and 'sleep' is similar, and this connection can enhance memory. It also helps to accumulate vocabulary. By splitting and branching topics, students can be exposed to more vocabulary in related fields, form a vocabulary network, and improve their ability to use vocabulary comprehensively. When creating a mind map, different colors and icons can be used to highlight different categories and words, making them clearer and more visible. For example, if you use red to highlight the category of "dangerous animals", you can draw a small tiger symbol next to the "tiger" on this branch. Simple examples or images can also be added to the card to make words easier to understand and remember. For example, draw a bird next to the word "bird" and write the sentence "A bird is flying in the sky". By constantly improving and modifying your mind map, you will be able to better remember many English words.

#### **4.9 Vocabulary Classification Memory Method**

The classification of CET-4 vocabulary helps students memorize target vocabulary. For example, vocabulary can be divided into three categories: basic vocabulary, medical vocabulary, and commonly used vocabulary. Medical students can prioritize learning high-frequency and medical vocabulary, and then diversify their learning to help students consolidate their basic vocabulary. Classification memory can help students establish a clear vocabulary system and reduce confusion during the learning process.

Classification memory is a very practical vocabulary memory strategy.

#### **4.9.1 Classified by Theme**

Daily themes: Categories include "household items", "kitchen items", "transportation vehicles", etc. For example, the category of "household items" includes words such as "sofa", "table", and "desk lamp". Through this classification, users can associate words with actual usage scenarios for learning, thereby deepening their experience. Considering the theme of "home life", it is easy to memorize a series of related words.

Understanding the theme: If you are a student, you can classify words according to the theme. For example, the theme of "mathematics" includes "addition", "subtraction", and "geometry"; Geometry and physics include gravity, velocity, velocity, and power. Through this classification, it is easier to systematically absorb relevant vocabulary when learning a subject.

#### **4.9.2 Classified by Part of Speech**

Nouns: These nouns are further divided into countable nouns and uncountable nouns, such as books and apples, as well as uncountable nouns, such as water and information. Through this classification, we can better understand the grammar rules of nouns, such as the singular and plural forms of countable nouns.

Verbs: Verbs can be classified according to different forms such as transitive and intransitive verbs. For example, 'eat' is a transitive verb and 'come' is an intransitive verb. Verbs can also be classified according to action types. For example, verbs can be divided into "body action verbs" (running, jumping) and "psychological verbs" (thinking, remembering). In this way, we can understand how verbs are used and combined.

Adjectives and adverb categories: Adjectives are used to modify nouns, such as "pretty" or "big"; Adverbs are used to modify verbs, adjectives, or other adverbs, such as "fast" or "very". Learn words by category to understand their position and function in sentences.

#### **4.9.3 Classified by Vocabulary Source**

Foreign words: For example, "caf  " and "ballet" come from French, while "radius" and "prize money" come from Latin. Bonus "comes from Latin. Due to the fact that loanwords generally retain the characteristics of their original language, understanding the origin of a word helps to comprehend its unique spelling and pronunciation.

Local words: derived from Old English words such as "day", "man", and "earth". By distinguishing word origins, we can better understand the evolution of English vocabulary and to some extent comprehend the cultural connotations of words.

To classify vocabulary, you can draw word maps or use mind mapping software. For example, draw a mind map around the big theme of "food" and then categorize fields such as "vegetables," "fruits," and "meat. In this way, words have clear classifications and are easier to remember intuitively. At the same time, adding examples, expressions, synonyms, and antonyms next to each word will make it easier to understand and remember.

## **5. POST CLASS REVIEW METHODS - PSYCHOLOGICAL THEORIES**

Forgetting curve theory: The forgetting curve theory proposed by German psychologist Ebbinghaus suggests that the process of forgetting is uneven, with a faster forgetting speed in the initial stage after learning, and gradually slowing down over time. Therefore, in order to improve the effectiveness of vocabulary memory, students need to review in a timely manner after learning, and review multiple times at reasonable intervals to strengthen their memory of words and reduce forgetting. The forgetting curve theory provides an important basis for developing a scientific vocabulary review plan.

## **6. CONCLUSION AND IMPLICATIONS**

This study provides strategies for medical students to learn CET-4 scientific vocabulary. Using intelligent vocabulary learning tools, combined with regular review and testing, can help medical students allocate their learning time reasonably in strict courses and effectively retain the vocabulary they have learned. This is of great significance for improving English proficiency. At the same time, the results of this study also provide new ideas for vocabulary learning in English courses.

## **6.1 Research Conclusion**

### *6.1.1 Differences in the Effectiveness of Memory Methods*

The diversified memory method has significant effects: the combination of multiple memory methods, such as associative memory, root and affix memory, can significantly improve the vocabulary memory efficiency of medical students. For a large number of complex and specialized words in medical vocabulary, using root and affix can analyze their meanings. Combining multiple memory methods is more helpful for medical students to improve their English CET-4 vocabulary memory ability than using a single method. For example, associative memory can associate medical expertise with English words, such as recalling the scene of an infection case in a hospital when memorizing "infection"; The root and affix memory method can help analyze the structure of words, such as "biology", and understand their meaning related to life through the root of "bio". The combination of these methods can enhance the memory effect. The application of strategies such as categorical memory, associative memory, situational learning, and root and affix method has shown good results among medical students, which helps to efficiently memorize and master vocabulary. When preparing for the College English Test Band 4, there are challenges such as insufficient vocabulary and low memory efficiency, but scientific learning strategies can significantly improve vocabulary memory effectiveness.

The importance of contextual memory: Learning and memorizing words in specific contexts is crucial for medical students. Reading English articles, watching related videos, etc. can make word memory more profound. Learning vocabulary in context not only helps to memorize the words themselves, but also deepens understanding of their application in professional fields.

### *6.1.2 Time Management and Repetitive Memory*

Carefully plan study time: Medical students should develop a scientific vocabulary memorization plan based on their own study schedule. Set aside a certain amount of time every day to memorize vocabulary, avoid excessive concentration, and adopt distributed learning, which is more conducive to long-term memory.

Following the repetition pattern: According to the Ebbinghaus forgetting curve, it is very important to regularly repeat learned vocabulary. Developing a scientific vocabulary review plan and arranging review intervals reasonably can effectively combat the forgetting curve. Due to the busy workload of medical students, regular review is essential for maintaining vocabulary. For example, repeat learning on the 1st, 3rd, 7th, and 15th day after the first learning session to ensure effective memory retention.

### 6.1.3 Individual Differences and Learning Motivation

It is important to take into account individual learning styles, as medical students may vary in their preferred methods of learning. For example, visual learners are suitable for memorizing words through pictures, charts, etc., while auditory learners have better memory effects during the process of listening to word pronunciation, explanation, etc. Understanding one's own learning style and adopting corresponding memory strategies can improve memory efficiency.

Reinforcement learning motivation: Learning motivation has a significant impact on vocabulary memory ability. If medical students recognize the importance of the English Test Band 4 for their future career development (such as international medical exchanges, reading cutting-edge medical literature abroad, etc.), they will be more actively engaged in vocabulary learning, thereby improving their memory retention.

## 6.2 Inspiration

Diversified teaching methods: English teachers should adopt multiple teaching methods when teaching medical students. They should help students learn effective vocabulary memory strategies by teaching different memory strategies in the classroom and providing examples of root segmentation.

For example, recommending English magazines and websites in class, reading English short articles, watching videos, etc. can help students learn vocabulary in specific contexts and improve their memory abilities.

Cultivate effective study routines: Establish sound habits in vocabulary acquisition and retention, adhere to a structured regimen, and apply the principles of repetitive memorization.

Consistently engage in daily vocabulary acquisition and maintain a prolonged commitment to enhance proficiency in memorizing English-Chinese CET-4 vocabulary.

Implementing four level teaching is conducive to strengthening interdisciplinary integration and improving the comprehensive application ability of medical knowledge [9].

## ACKNOWLEDGMENTS

Project Fund: 2023 National College Student Innovation and Entrepreneurship, Project number: Jiao Gao Si (2023) No.8-S202310823024 Research on the strategy of improving the four-level vocabulary memory ability of medical students.

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