

## English vocabulary accumulation, barriers, and strategies among Chinese non-English majors

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Received: 1 April 2024  
Available Online: 15 June 2024

Revised: 15 May 2024  
DOI: 10.5861/ijrsl.2024.015

Accepted: 30 May 2024

ISSN: 2243-7754  
Online ISSN: 2243-7762

OPEN ACCESS



### **Abstract**

This study investigated the vocabulary accumulation, learning barriers, and learning strategies in English vocabulary learning of non-English major students at Hubei University of Automotive Technology. It employed descriptive research involving 400 participants from Hubei University of Automotive Technology, who were asked to complete a questionnaire survey. The research results indicate that non-English major students have different motivations in the process of vocabulary accumulation, and passing examinations or preparing for employment has become the biggest motivation for respondents to learn vocabulary. Students have learned to use different tools and strategies. Compared to students majoring in English, non-English majors face more emotional, technical, and cultural barriers in vocabulary learning. In terms of vocabulary learning strategies, respondents tend to use compensation strategies, metacognitive strategies, and cognitive strategies more frequently, while using social and emotional strategies less frequently. In addition, there is a significant correlation between vocabulary accumulation, vocabulary learning barriers, and learning strategies in English vocabulary learning. Finally, a language learning program was proposed to help Chinese non-English major college students accumulate vocabulary, overcome vocabulary learning barriers, and improve vocabulary learning strategies.

**Keywords:** vocabulary accumulation, vocabulary barriers, vocabulary strategies, memory methods, non-English majors

## English vocabulary accumulation, barriers, and strategies among Chinese non-English majors

### 1. Introduction

Vocabulary is a prerequisite for language interaction and communication. In the process of daily interaction and communication, the most challenging aspect is students' vocabulary. If a student's English vocabulary is very poor and their generalization ability is poor, their entire communication dialogue will also be pale and powerless. On the contrary, if one has a rich vocabulary, he/she will naturally speak eloquently and strive for reasoning during communication, thereby effectively promoting the smooth implementation of communication activities. Vocabulary is the basic material that constitutes a language and an important component of it. Vocabulary accumulation is crucial for language learning. Lina (2023) discussed three factors that contribute to difficulties in learning English: textbooks, language distance, and teachers. EFL students lack the authentic and socio-cultural context of the target language as their sources of vocabulary input. Therefore, there are difficulties in accumulating English vocabulary among Chinese college students, and the methods and tools are not scientific enough. Chinese college students have increasingly serious vocabulary barriers in English, lack scientific memory methods, incorrect motivation, fear of difficulties, rapid forgetting, and inability to use them. There is an urgent need to study the variable of vocabulary barriers, to gain a detailed understanding of the learning barriers of Chinese university students from cultural, emotional, and technological perspectives, and to find solutions to these problems.

Vocabulary accumulation, vocabulary learning barriers, and vocabulary learning strategies are the three important dimensions of vocabulary learning. Foreign language teaching cannot be separated from vocabulary teaching, and vocabulary learning runs through the entire process of language learning. Without mastering a certain amount of vocabulary, listening, speaking, reading, and writing in English cannot proceed smoothly, which directly affects the application and development of students' abilities. Vocabulary accumulation is the first important variable, as understanding the existing vocabulary accumulation of students is crucial for subsequent analysis. Scholars have evaluated the dynamic development relationship between vocabulary knowledge and reading comprehension, and the bivariate model indicates that previous vocabulary knowledge levels are the main indicator of reading comprehension growth (Jamie, et al., 2014). This indicates that vocabulary accumulation is an important factor affecting reading proficiency. In addition, a study investigated the relationship between undergraduate vocabulary knowledge and four language skills in Japanese English Teaching (EMI) courses. The results indicate that learners with higher self-evaluation of vocabulary knowledge are more likely to believe that they are proficient in productive language skills (Takumi, et. al., 2018). This further illustrates the importance of vocabulary accumulation as a variable. Language cannot be separated from the accumulation of vocabulary, as vocabulary is the most basic material that constitutes language. Without vocabulary accumulation, sentences and language are irrelevant.

Vocabulary learning barriers are the second important variable. Zhao, et. al., (2012) conducted questionnaires and vocabulary tests on 120 students from the School of Literature, Bohai University. The results showed that the main obstacles to non-English majors' vocabulary learning were the following three aspects: word collocation, polysemy, and cultural differences. Zheng (2017) found that over time, the drawbacks of neglecting the context and cultural connotations of vocabulary when memorizing words gradually become apparent. Zhang (2011) found that students are prone to cultural errors or deeper errors in cultural backgrounds during writing training. Vocabulary learning strategies are the main part of language learning strategies, with a focus on pointing out the methods and skills that learners adopt in the process of mastering words. The use of vocabulary learning methods and strategies not only helps learners to understand vocabulary memory skills faster, but also helps them better understand and apply vocabulary, achieving the goal of improving vocabulary application ability (Lu, et. al., 2021).

At present, there are relevant literature on English vocabulary learning strategies, the application of English vocabulary strategies in teaching, English learning motivation, English learning obstacles, etc. both domestically and internationally. However, there are not many specialized studies on the current situation, obstacles, and strategies of English vocabulary learning for non-English major college students. Compared to students majoring in English, non-English major students urgently need professional help and progress in vocabulary. They lack professional guidance and scientific and effective methods in English vocabulary learning. Many non-English major teachers are still confused by many issues. Therefore, for the vast number of non-English major students in China, it is urgent to deeply analyze the current situation of English vocabulary accumulation, reflect on vocabulary learning obstacles, and explore scientific and reasonable vocabulary learning strategies. Studying the accumulation of English vocabulary, learning barriers, learning strategies, and the relationship between the three variables can not only help Chinese non-English major college students improve their English vocabulary and better assist their own professional studies in English, but also provide inspiration for teachers who undertake public foreign language courses for non-English majors. It can help teachers find vocabulary teaching difficulties and optimize teaching methods.

**Objectives of the Study** - This study aimed to determine the English vocabulary accumulation, learning barriers, and learning strategies among non-English major college students in China, in order to develop a language program to enhance English vocabulary teaching and learning. Specifically, it sought to determine English vocabulary accumulation of the learners reflected on motivation, current level, frequency, and methods; identify respondents' learning barriers in the vocabulary learning process in terms of emotional, technical, and cultural barriers; identify vocabulary learning strategies as to memory, cognitive, compensation, metacognitive, affective, and social strategies; test the significant relationships among vocabulary accumulation, learning barriers, and learning strategies; and propose a language program to enhance English vocabulary teaching and learning.

## 2. Methods

**Research Design** - This study aimed to explore the accumulation, barriers, and strategies of English vocabulary among Chinese non-English major students, as well as determine the relationship between these three variables. This study used descriptive correlation method to describe and explain the relationships among the three variables. Descriptive research includes the analysis and explanation of three variables: English vocabulary accumulation, vocabulary learning barriers, and learning strategies. The descriptive correlation analysis method mainly focuses on the correlation analysis of two or more variables with the same subject group, exploring the situation of English vocabulary accumulation, barriers, and strategies of Chinese non-English major students, and testing the correlation between the three variables without deliberate manipulation.

**Participants of the Study** - This study was conducted at Hubei University of Automotive Technology, involving 400 non-English major students ranging from freshmen to seniors. Their majors fall into four categories, which are economics, management, science, and engineering, covering fields such as software engineering, mechanical engineering, electronic information and technology, and tourism management. These majors have typical representative significance in Chinese engineering colleges and are fundamental disciplines in many engineering colleges. Students in these majors have fewer opportunities to receive guidance on professional English learning methods, and there are generally some difficulties in accumulating vocabulary. Raosoft tool was used to make sure the quantity of the participants is scientific. The population size is 8000, and by turning the margin of error into 5%, confidence level into 96%, the response distribution into 50%, then recommended sample size turned out to be 401. The subjects have met the target group requirements of the questionnaire. Conducting surveys on these non-English major students can help draw scientific conclusions.

**Instruments of the Study** - This study used a survey questionnaire, which is based on three variables: vocabulary accumulation, vocabulary barriers, and strategies. Each variable is further divided into several dimensions, and each dimension aims to investigate different aspects of each variable. Corresponding questions are set under each dimension. The variable 'vocabulary accumulation' has four dimensions: motivation,

multilingual ability, tools, and methods. The questions were adapted from *Motivation Theory, Mind Mapping, and English Vocabulary Learning for College Students* by Li (2007) while the variable 'vocabulary barrier' has three dimensions: emotional barrier, technical barrier, and cultural barrier. The questions were adapted from *English Vocabulary Learning Obstacles for Non-English Major Students* by Zhao, et. al., (2012); and the variable 'vocabulary strategy' has six dimensions, including memory strategy, cognitive strategy, compensation strategy, metacognitive strategy, emotional strategy, and social strategy. The questions were adapted from *Survey on Non-English Majors' Application of English Vocabulary Learning Strategies* by Deng (2020).

The questionnaire adopted Oxford's (1990) language learning strategy scale and draws on the questioning content of some scholars' questionnaires to form this questionnaire. This study explored the overall status of the use of English vocabulary learning strategies by non-English major undergraduate students; the differences in the use of English vocabulary learning strategies among non-English major undergraduate students grouped by gender, major classification, and grade; and how to address the issues identified in this study. To ensure the reliability of the questionnaire, a pilot study was conducted among 27 non-English major students. The data of these participants were collected through a "questionnaire star", then encoded and input into SPSS 27.0 for analysis to calculate the Cronbach Alpha coefficients for each subscale and the entire questionnaire. The reliability results of three survey variables indicate that the Cronbach Alpha coefficients of all subscales range from 0.902 to 0.972. In addition, the Cronbach Alpha of the entire questionnaire reached 0.910. Therefore, the internal consistency reliability coefficients of the subscale and the entire questionnaire are acceptable as they exceed 0.70.

**Data Gathering Procedure** - By collecting questionnaire results online through 'Questionnaire Star', the English questionnaire was translated into Chinese and the purpose of the questionnaire was indicated. Next, the questionnaire content was created into a QR code and sent in the form of a QR code image to the four teachers from the School of Economics and Management and the School of Electrical and Information Engineering of the University. Teachers were asked to assist in sending the QR code to the first to fourth year students in economics, management, science, and engineering at the university. There were many questions in the questionnaire, and students needed to be willing to invest a certain amount of time and have good patience. College teachers were requested to mobilize students to actively cooperate and answer truthfully to ensure the quantity and quality of the questionnaire. Students scanned QR codes on WeChat to obtain questionnaire links and directly answered and submitted on their phones. After collecting data, SPSS 27.0 was used to explain, analyze, and compare participants' responses. Finally, frequency counts, percentages, rankings, and weighted averages were used for statistical processing.

**Data Analysis** - A total of 400 valid questionnaires were collected for this study. After collection, the data were encoded, tabulated, and submitted for statistical processing. Then, weighted average values were used to analyze the English vocabulary accumulation, vocabulary learning barriers, and learning strategies of Chinese non-English major college students. Additionally, Spearman correlation analysis. Following analysis, recommendations for additional research were given for subsequent study.

**Ethical Considerations** - Moral and ethical review was considered an important aspect of the paper. Firstly, when designing questionnaire questions, it was important to avoid using any insulting, offensive, or discriminatory words to ensure equal respect for each participant. Secondly, the subjects had the right to know the purpose of this questionnaire test, understand the content of the questionnaire, and voluntarily decide whether to participate in the filling out, or they could stop or refuse at any time. Finally, the privacy rights of the tested group was protected. The University Ethics Review Committee Office provided the ethical review results of this questionnaire.

### 3. Results and discussion

Table 1 shows various factors that affect vocabulary accumulation, including motivation, multilingual ability, tools, methods, and so on. The results showed that students had the highest level of recognition in terms of vocabulary accumulation motivation, with a value of 3.04. The motivation for students to accumulate vocabulary

generally includes passing the CET-4 and CET-6 or graduate entrance exams, preparing for their future career, wanting to understand English movies, singing English songs, and other life needs, as well as obtaining recognition from others for value realization. This indicates that in future vocabulary teaching, teachers should pay more attention to assisting students in vocabulary guidance through various English exams, selecting more targeted vocabulary content and teaching methods, and helping students reduce the pressure of further education and exams.

**Table 1***Summary Table on Vocabulary Accumulation*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Motivation	3.04	Agree	1
Multilingual Proficiency	2.32	Disagree	4
Tools	2.58	Agree	3
Methods	2.63	Agree	2
Composite Mean	2.64	Agree	

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree*

In terms of vocabulary accumulation methods, students also have a high recognition rate of 2.63. The most recognized vocabulary accumulation method among students is through storytelling, rhythm, diary keeping, writing, oral practice, and spelling rules to learn vocabulary. This indicates that students have a certain level of metacognitive ability in vocabulary accumulation methods and are aware of adopting scientific learning methods. It inspires teachers to pay more attention to the difficulties of students' vocabulary accumulation and the practical application of various methods in teaching. At the same time, pay attention to the teaching materials and language materials provided to students, whether they can effectively help students master vocabulary, whether they can help students learn to understand and remember vocabulary in context, whether they have created a relaxed vocabulary accumulation environment in the classroom, and whether they can comprehensively mobilize students' hands, mouth, eyes, ears, and other senses to remember words. In terms of the choice of vocabulary accumulation tools, the average recognition of students is 2.58. Among them, the recognition of such tools as mastering vocabulary through classroom teaching, visiting useful websites, and using WeChat official account is relatively high. The enlightenment is that, first, researchers should pay more attention to the quality of vocabulary teaching in class, because this is the tool that students use most to accumulate vocabulary. The second is to recommend appropriate English websites and relevant official account to students to provide them with high-quality choices. The recognition of multilingual ability is the lowest, indicating that students pay more attention to learning English vocabulary rather than developing a third or fourth foreign language, and believe that it has a smaller impact on their English vocabulary.

In sum, the average result of vocabulary accumulation is 2.64, indicating that students agree with the options for this variable. Students recognize the motivation, tools, and methods for accumulating English vocabulary, which also inspire us to improve teaching quality, enhance communication and interaction with students, and provide relevant guidance for students in these areas. Teachers of the modern day must combine technology with English language instruction. Most students access information via smartphones. One useful tool for enhancing English language learning, particularly vocabulary acquisition, is Duolingo. One of the best resources for learning vocabulary is Duolingo. Learners find this to be highly engaging since they respond well to these apps, grasp the content with ease, and have an equal opportunity to practice it. Additionally, Duolingo helps learners avoid learning monotony and inspires them to come up with fresh learning ideas (Ajisoko, 2020). Effective word learning strategies are always necessary for language learners since word knowledge is crucial to learning a second language. The swift advancement of educational technology has led to the emergence of game-based learning as a highly promising topic. Language learners, educators, and researchers have shown a growing interest in digital game-based vocabulary learning. A theoretical framework, an overview of existing research, digital games for vocabulary learning, research questions and findings, and implications were the five aspects from which some scholars assessed the literature on vocabulary learning based on digital games. According to the research, ten categories of digital games predominate the market. These games frequently support vocabulary acquisition both short- and long-term, reading and listening comprehension, motivation and engagement, anxiety reduction, and student interaction. participated actively. These results additionally offer meaningful implications for vocabulary

learning and game design (Di et al., 2019).

**Table 2**  
*Summary Table on Learning Barriers and Learning Strategies*

Indicators	Weighted Mean	Verbal Interpretation	Rank
Emotional	2.74	Agree	2
Technical	2.71	Agree	3
Cultural	2.81	Agree	1
Composite Mean	2.75	Agree	
Memory Strategy	2.75	Agree	4
Cognitive Strategy	2.80	Agree	3
Compensation Strategy	2.90	Agree	1
Metacognitive Strategy	2.83	Agree	2
Affective Strategy	2.75	Agree	4
Social Strategy	2.69	Agree	6
Composite Mean	2.79	Agree	

*Legend: 3.50 – 4.00 = Strongly Agree; 2.50 – 3.49 = Agree; 1.50 – 2.49 = Disagree; 1.00 - 1.49 = Strongly Disagree*

Table 2 shows the average scores of students' recognition of the three levels of English vocabulary learning disabilities, and the results indicate that students agree with various vocabulary learning disabilities in terms of culture, emotion, and technology. The cultural barrier score is 2.81, ranking first; emotional barriers scored 2.74, ranking second; and the technical barrier score is 2.71, ranking third. Teachers should pay attention to students' emotional disorders, encourage them to cultivate interest and confidence, and firmly believe that they can overcome the difficulties of vocabulary learning. In daily teaching, strive to provide students with scientific and advanced vocabulary learning tools and techniques as much as possible. There was a meta-analysis examined studies conducted on technology-assisted vocabulary learning in English as a foreign language for second language learners between 2012 and 2018.

The meta-analysis included contributions from 45 research including 2,374 English language learners from preschool to college. Technology-assisted second language vocabulary learning has a greater overall effect ( $g=0.845$ ) when compared to traditional teaching approaches, suggesting that it is more advantageous than non-technology-assisted instruction. Crucially, comparisons made within studies demonstrate that technology can enhance students' long-term language retention. The analysis's findings indicated several factors, including test format, reporting reliability, device type, game settings, and context, that affect how effective vocabulary acquisition is. The benefits of mobile devices and m-learning indicate that acquiring L2 vocabulary could be the most effective when students are on their phones and not constrained by the constraints of a classroom setting. In technology-assisted L2 vocabulary learning, these variables should be considered when planning instruction (Tao et al., 2021).

Table 2 also summarizes the six dimensions of English vocabulary learning strategies (memory strategy, cognitive strategy, compensation strategy, metacognitive strategy, affective strategy, and social strategy), with an overall average score of 2.79, indicating that students agree with the content of the six sub dimensions of vocabulary learning strategies. From the scoring situation, the compensation strategy with the highest score indicates that students generally use guessing, substitution, body language and other communication methods to compensate for their lack of vocabulary when encountering vocabulary barriers. Research has found that guessing word meanings based on context and using dictionaries seem to be the favorite strategies of good scholars. The survey found that EFL learners use guessing strategy the most in vocabulary learning, while repetition strategy, memory strategy, dictionary strategy, translation strategy, and using background knowledge and personal experience for vocabulary learning are widely used. Following closely behind are metacognitive and cognitive strategies (Jiang, 2020), believes that among all learning strategies, metacognitive strategies are higher than others and are key to ensuring learner learning efficiency. Scholars have also found through surveys that cognitive strategies are the most frequently used strategies by students.

The scores of memory strategy and emotional strategy are tied for fourth place. Memory strategy is actually a strategy that establishes a connection between new knowledge and existing knowledge and experience,

specifically including pronunciation memory, associative memory, card memory, affix memory, and so on. Using scientific vocabulary memory methods to guide students in correct English learning can effectively improve their vocabulary retention. Although modern psychologists, educators, and language development experts have provided many effective scientific methods for people to memorize English vocabulary, only by comprehensively applying these methods on the basis of understanding their own learning patterns can they be effectively realized. Firstly, the forgetting pattern memory method. The theoretical research results of psychologists indicate that human forgetting follows a pattern of first fast and then slow. According to this pattern, students can systematically repeat and memorize English words they have learned, thereby improving vocabulary memory through repeated consolidation. Secondly, the divergent memory method utilizes a multi-dimensional way of thinking to comprehensively recognize the learned words, achieving the initial memory of vocabulary learning, and then conducting multi-level and three-dimensional memorization in the mind to achieve "secondary memory". By using divergent thinking to remember multiple words with similar roots, students can improve their own memory efficiency.

The new English Curriculum Standards revised by the Ministry of Education in 2001 have added requirements for emotional and cultural strategies in terms of curriculum objectives, which also highlights the importance of emotional strategies in English learning strategies. Emotion, as a unique psychological phenomenon of human beings, is a subjective experience related to social needs. In psychology, emotion refers to the psychological experience that arises from whether objective things meet human needs, desires, and viewpoints. The lowest overall score is social strategy, which is consistent with the research findings of scholars in previous years. When faced with unfamiliar words, participants tend not to seek help from others.

Table 3 presents the association between vocabulary accumulation and learning barriers. It was observed that the computed r-values indicates an almost negligible to weak correlation, however, only motivation vs. technical; multilingual proficiency vs. technical and cultural; and tools vs. learning barriers shows significant relationship. This means that there was significant relationship exists and implies that the more motivation, the lesser barriers on technical; while the better the vocabulary accumulation, the more barriers experienced. The first conclusion is that the stronger the motivation to learn vocabulary, the smaller the technical barriers. The stronger the motivation of students to learn vocabulary, the stronger their subjective initiative, and the stronger their desire to actively solve problems. Therefore, they are more willing to use their intelligence to actively seek various ways to solve technical obstacles in vocabulary learning, gradually overcome technical obstacles, and achieve the goal of vocabulary accumulation.

**Table 3**  
*Relationship between Vocabulary Accumulation and Learning Barriers*

Motivation	r-value	p-value	Interpretation
Emotional	-0.090	0.072	Not Significant
Technical	-.165**	0.001	Significant
Cultural	-0.072	0.150	Not Significant
<b>Multilingual Proficiency</b>			
Emotional	0.091	0.068	Not Significant
Technical	.158**	0.001	Significant
Cultural	.134**	0.007	Significant
<b>Tools</b>			
Emotional	.268**	0.000	Significant
Technical	.194**	0.000	Significant
Cultural	.200**	0.000	Significant
<b>Methods</b>			
Emotional	0.027	0.593	Not Significant
Technical	-0.051	0.311	Not Significant
Cultural	-0.057	0.257	Not Significant

*Legend: Significant at p-value < 0.05*

For example, students who enjoy the process of learning vocabulary will consciously extend their vocabulary learning time and memorize the Chinese definitions of vocabulary; Faced with the situation of forgetting words,

students who have a strong desire to pass the CET-4 and CET-6 exams can use willpower to urge themselves to memorize repeatedly, rather than falling into a depressed mood or choosing to give up; Students who are eager to have fluent conversations with foreigners will search online for video tutorials, explore pronunciation methods for phonetic symbols, and imitate correct pronunciation; Students who enjoy watching English movies or want to sing English songs will choose their favorite English movies or songs, and are willing to spend time memorizing the lyrics and looking up new words in a dictionary. In this process, vocabulary learners gradually explore suitable vocabulary learning methods and overcome technical barriers.

Based on previous research on adult learning characteristics and typological classification, some scholars have named the four major types of learners as alienation type (low motivation, highest obstacle), laziness type (low motivation, high obstacle), developmental type (high motivation, low obstacle), and ideal type (highest motivation, lowest obstacle). In previous studies, motivation was considered a positive key factor affecting learning outcomes, while the higher the obstacle, the more likely it is to lead to academic suspension. Based on this, adult learners with the highest motivation and lowest barriers are the most ideal type, hence the name "ideal type". For learners with high motivation and low barriers, although not the most ideal, there is room for development that can enhance their learning motivation and reduce learning barriers, hence the name "developmental".

The biggest factor that constrains the learning of adult learners with low motivation and the highest obstacles is the obstacle factor. They are unable to overcome or reduce all obstacles to learning (such as time, curriculum, confidence), and can only be detached from regular course learning. It is difficult to ensure classroom attendance, offline discussions, homework completion and other learning tasks, so they are named "alienation type". Another type of adult learners with the lowest motivation and higher barriers, the biggest factor that restricts their learning is lack of motivation. Even if they can overcome or reduce learning barriers, they still lack motivation to complete academic tasks. Unlike the disengaged type, they will participate in learning step by step, but they are very lazy, have a bad attitude, lack learning interest and willpower, so they are named the "lazy type". There are significant differences in overall learning outcomes, cognitive gains, emotional gains, employment gains, social life gains, and family life gains among different types of adult learners. From high to low, they are ideal, developmental, alienated, and lazy. This result is consistent with the conclusion found in this study that "the stronger the motivation for vocabulary learning, the smaller the technical barriers encountered", which motivates language learners to strengthen internal and external motivation and overcome obstacles.

The third conclusion is that language learning tools are related to emotional, technical, and cultural barriers. Generally speaking, students who feel strongly about emotional barriers, such as those who often find it difficult to learn words and whose pronunciation is not standard, tend to use learning tools that do not allow others to cooperate, such as browsing the web, following WeChat official account, reading newspapers and magazines, and using single word learning apps. Students with weaker emotional barriers are more willing to interact with teachers and classmates in the classroom, actively answer questions, and participate in various activities to consolidate vocabulary. Taking the English learning of ethnic minority students in Xinjiang, China as an example, some scholars believe that in order to fundamentally solve the obstacles in English vocabulary learning for ethnic minority students in Xinjiang, it is necessary to stimulate their learning initiative, and the first and foremost thing is to stimulate their interest in learning. Try to connect the vocabulary in the book with their automotive repair major and stimulate their interest in vocabulary learning from a practical perspective. Properly utilizing the simple and easy association method of Chinese homophones can enable students to achieve unexpected memory effects in a humorous and relaxed atmosphere (Zheng, 2017).

In addition, technological barriers are also related to language learning tools. Students with fewer technical barriers tend to use the latest tools, such as the FIF oral practice platform, videos and accounts related to phonetic symbols learning, word check-in apps, and using the latest electronic dictionaries. Students with more technical barriers, such as inaccurate phonetics, difficulty in pronunciation, and lack of memory skills, tend to use more traditional learning tools, such as memory cards and textbooks. And for students who choose appropriate learning tools, the learning mode is becoming more scientific, which in turn reduces their technical barriers to learning



vocabulary. And these students tend to use multiple language learning tools rather than being limited to one. Mobile Assisted Language Learning (MALL) emerged in the 1990s.

The research on MALL in the field of language learning is very extensive, and in the past decade, there has been continuous research on MALL and language learning abroad. David, et. al., (2015) studied the attitudes of engineering undergraduate students at the University of Applied Sciences in South Westphalia towards using the smartphone application Quizlet to learn English vocabulary. Through interviews, students found that using mobile learning flashcards is a very effective, convenient, and enjoyable learning method. Cultural barriers are also closely related to language learning tools. Students who tend to use learning tools that are disconnected from context, such as word check-in apps, word memory cards, word lists, exam reference books, classroom learning, etc., in order to save time, do not put words into context, nor do they study the cultural meanings and usage scenarios behind words. As a result, they are often more likely to forget in the future and create more cultural barriers.

Students who choose to put words into specific usage contexts, or who spend time understanding the cultural meaning behind words, such as those who choose to browse news websites and read English original books, newspapers, and magazines, will gradually reduce cultural barriers. Research has found that if vocabulary teaching activities are limited to presenting simple explanations on the surface of words and lack contextual preparation, it is difficult to achieve the implementation of students' basic language skills and the improvement of their practical application abilities. In specific language environments, inferring and learning vocabulary based on contextual clues can help students remember words more firmly and vividly. (Tao, 2014). The cultural differences between China and the UK affect English learning and communication in many ways. This requires students to tap into their intelligence, unleash their abilities, and learn English with agility, flexibility, and critical thinking. However, for a long time, high school English teaching has neglected language and cultural differences, and has been taught in a model of "grammar+vocabulary+Chinese meaning". Separating language learning from cultural learning is not conducive to the true cultivation of students' cross-cultural communication abilities, nor is it conducive to their true mastery of English (Zhang, 2011).

**Table 4**  
*Relationship between Vocabulary Accumulation and Learning Strategies*

Motivation	r-value	p-value	Interpretation
Memory Strategy	.349**	0.000	Highly Significant
Cognitive Strategy	.471**	0.000	Highly Significant
Compensation Strategy	.423**	0.000	Highly Significant
Metacognitive Strategy	.575**	0.000	Highly Significant
Affective Strategy	.399**	0.000	Highly Significant
Social Strategy	.414**	0.000	Highly Significant
<b>Multilingual Proficiency</b>			
Memory Strategy	.348**	0.000	Highly Significant
Cognitive Strategy	.349**	0.000	Highly Significant
Compensation Strategy	.278**	0.000	Highly Significant
Metacognitive Strategy	.350**	0.000	Highly Significant
Affective Strategy	.375**	0.000	Highly Significant
Social Strategy	.395**	0.000	Highly Significant
<b>Tools</b>			
Memory Strategy	.532**	0.000	Highly Significant
Cognitive Strategy	.547**	0.000	Highly Significant
Compensation Strategy	.438**	0.000	Highly Significant
Metacognitive Strategy	.536**	0.000	Highly Significant
Affective Strategy	.572**	0.000	Highly Significant
Social Strategy	.516**	0.000	Highly Significant
<b>Methods</b>			
Memory Strategy	.556**	0.000	Highly Significant
Cognitive Strategy	.620**	0.000	Highly Significant
Compensation Strategy	.497**	0.000	Highly Significant
Metacognitive Strategy	.623**	0.000	Highly Significant
Affective Strategy	.537**	0.000	Highly Significant
Social Strategy	.599**	0.000	Highly Significant

*Legend: Significant at p-value < 0.01*

Table 4 displays the association between vocabulary accumulation and learning strategies. The computed r-values indicate a moderate direct correlation and the resulted p-values were less than the alpha level. This means that there was significant relationship exists and reveals that the better the assessment on vocabulary accumulation, the better the strategies employed in learning. Firstly, from the perspective of vocabulary accumulation motivation, the stronger the motivation, the more frequent the use of vocabulary learning strategies, and the better the effect. A study has explored the development of motivational strategies in second language vocabulary learning and their relationship with vocabulary knowledge from a dynamic perspective of motivation. The following conclusions have been drawn: in the pre action, middle, and post action stages of vocabulary learning, the motivational strategies of participants exhibit varying degrees of negative characteristics, that is, in the pre action stage, self-efficacy in vocabulary learning is lower and anxiety is higher; In the action stage, the ability to self-regulate tasks and emotions is relatively weak, and strategies to expand extracurricular vocabulary are more explored than vocabulary learning methods. They tend to use vocabulary learning strategies such as reinforcement, comprehension, and connection strategies; In the post action stage, the post evaluation of vocabulary learning effectiveness is relatively low.

In terms of the relationship between motivational strategies and grade level in the process of motivational development, this study found that second grade students showed significantly lower performance in motivational strategies such as learning anxiety, task control, emotional control, self transcendence, reinforcement strategies, and social strategies compared to first grade students, indicating that with the increase of study years, the development of motivational strategies showed a significant decline (Ma, et. al., 2016). Students with strong motivation for vocabulary learning tend to actively use various learning strategies, explore suitable learning strategies, and achieve their own goals.

Secondly, from the perspective of multilingual ability in vocabulary accumulation, vocabulary learning strategies also have an important impact, indicating that various foreign languages have their commonalities and require the accumulation of certain vocabulary, mastery and use of certain vocabulary learning strategies. From the perspective of vocabulary accumulation tools and methods, they are closely related to the six strategies, indicating that tools and methods are the means of strategy implementation, while learning strategies are the content of using tools and methods, and the two are inseparable. For example, students can use memory strategies through reading magazines, social strategies through classroom teaching, compensation strategies through dictionaries, and so on.

Scholars have used experimental and control groups to study the effects of paper-based vocabulary self-learning and mobile network platform vocabulary self-test learning on student vocabulary memory. The research results indicate that: (1) There is no significant difference in the impact of different vocabulary learning methods on the short-term memory performance of the same level of vocabulary; (2) Different vocabulary learning methods have an impact on the delayed memory performance of vocabulary at the same level, with the effectiveness of mobile network platform self-test learning slightly greater than that of paper-based vocabulary self-learning. This indicates that different learning tools in the new era affect the use of memory strategies and the effectiveness of learning.

The relationship between vocabulary learning methods and strategies is similar to the relationship between guiding ideology and specific behavior. Vocabulary learning strategies are the guiding ideology for choosing a certain vocabulary learning method, and vocabulary learning methods are the specific embodiment of vocabulary learning strategies. For example, the methods of memorizing and dictating words reflect cognitive strategies, setting learning time for self-management reflects metacognitive strategies, actively communicating with others to practice speaking reflects compensatory strategies, and giving oneself rewards and affirmation after achieving vocabulary learning goals reflects emotional strategies. For example, some scholars have found that many college students have a single method of learning English vocabulary, mainly relying on mechanical memory methods such as listening to teachers in class and memorizing after class to remember the pronunciation of words and the meanings that appear in the text. They lack a comprehensive and systematic understanding of the application of

parts of speech and collocations. Most students rely too much on classroom teaching and neglect the importance of reviewing after class, resulting in forgetting more, and even learning while memorizing, the phenomenon of forgetting while recording.

Many students in English learning only complete vocabulary learning and mastery to cope with homework assigned by teachers and lack a positive desire for independent learning of new knowledge. On the other hand, due to the demand for exam level exams, many students adopt the method of cramming real questions and memorizing exam level vocabulary to pass the exam. This learning method is far from meeting the requirements and goals of college English vocabulary learning. At present, many college students, due to the influence of the College English Test Band 4 and Band 6, rely mainly on the method of memorizing English vocabulary before the exam. This attitude is not correct enough and lacks a scientific and systematic learning method, which is largely detrimental to the overall improvement of students' English proficiency. Hosen Feld pointed out that "often we focus on what students should be doing, and in fact, we should start by asking students what they are doing. Therefore, it is necessary to consider the learner's feelings, pay attention to their views on vocabulary learning strategies, and study their understanding of vocabulary learning strategies.". All research results have shown that a positive learning attitude and scientifically reasonable learning strategies are highly beneficial for students to learn and master English vocabulary, as well as improve their English proficiency (Wang, et. al., 2020).

**Table 5**  
*Relationship between Learning Barriers and Learning Strategies*

	r-value	p-value	Interpretation
<b>Emotional</b>			
Memory Strategy	.158**	0.001	Significant
Cognitive Strategy	0.026	0.598	Not Significant
Compensation Strategy	.138**	0.006	Significant
Metacognitive Strategy	-0.059	0.240	Not Significant
Affective Strategy	.123*	0.014	Significant
Social Strategy	0.036	0.476	Not Significant
<b>Technical</b>			
Memory Strategy	.156**	0.002	Significant
Cognitive Strategy	-0.033	0.507	Not Significant
Compensation Strategy	0.048	0.333	Not Significant
Metacognitive Strategy	.129**	0.010	Significant
Affective Strategy	0.074	0.140	Not Significant
Social Strategy	-0.045	0.365	Not Significant
<b>Cultural</b>			
Memory Strategy	.204**	0.000	Significant
Cognitive Strategy	0.061	0.224	Not Significant
Compensation Strategy	.119*	0.017	Significant
Metacognitive Strategy	-0.024	0.632	Not Significant
Affective Strategy	.191**	0.000	Significant
Social Strategy	0.012	0.815	Not Significant

*Legend: Significant at p-value < 0.05*

As seen from Table 6, there were significant relationship between emotional and cultural and memory strategy, Compensation Strategy and Affective Strategy; and technical vs. Memory Strategy and Metacognitive Strategy. This was observed since the obtained p-values were less than the alpha level. This means that the more barriers encountered, the better strategies they employed.

The first conclusion is that the emotional barriers to vocabulary accumulation are closely related to memory strategies, compensation strategies, and emotional strategies. When vocabulary learners experience negative emotions, such as frequent feelings of tension, anxiety, failure, and disgust, it will inevitably affect their memory efficiency. Appropriate anxiety and stress can help improve efficiency, but excessive stress can make it difficult for learners to concentrate and enter an immersive thinking mode, reducing learning efficiency. The frustration of frequently forgetting vocabulary can also reduce students' motivation and unwillingness to explore more effective memory strategies.

Anxiety is one of the important emotional variables, which is a collection of various negative emotional

reactions and psychological discomforts in foreign language learning, affecting learners' choice of foreign language learning strategies. Research analysis shows that students generally experience anxiety, and the level of learning anxiety, frequency of learning strategy use, and type of strategy will change throughout the semester; There are differences in the types and frequency of strategy use among students with different levels of anxiety. Students with moderate anxiety levels have lower frequency of strategy use than those with low anxiety levels; The higher the level of anxiety, the lower the frequency of strategy use. Due to language anxiety itself, it can damage cognitive function, interfere with memory, and lead to avoidance behavior. Learners may worry about not being able to complete learning tasks, which can distract their attention and prevent them from consciously using various strategies more frequently. Students with frequent emotional disorders need to learn how to use compensation and emotional strategies. When encountering difficulties, they can think of compensation methods like guessing and switching vocabulary to promote communication. When encountering difficulties and setbacks, they can learn to encourage themselves and use emotional strategies to cope with anxiety. With the assistance of these two strategies, they can reduce anxiety and improve the use of memory strategies.

The second conclusion is that technical barriers are related to memory strategies and metacognitive strategies. When students accumulate vocabulary, the greater the technical barriers, such as not recognizing phonetics, not understanding the letter combinations corresponding to phonetics, and the relationship between these knowledge and memorizing words, it often means that students do not have good memory methods and strategies, and need to use longer time or mechanical memory to accumulate words. If this situation is not improved for a long time, it also means that students have poor use of metacognitive strategies, have not supervised their own accumulation of words for too long, the methods are not scientific, and technical barriers need to be solved.

Students have insufficient understanding of their English metacognitive abilities. After more than a decade of the "test for practice" learning model, many students suddenly immerse themselves in the university learning atmosphere that advocates self-directed learning style. They do not know how to learn or what learning methods are suitable for them. Without the guidance and guidance of teachers and parents, students' English learning style is still stuck in middle school, mechanically memorizing words, but their vocabulary is difficult to expand, and even their English proficiency has declined. When students memorize vocabulary, there is a disconnect in spelling, pronunciation, meaning, and usage.

Many students still rely on traditional rote memorization of words in the order of the word list, which can only briefly remember spelling and is easy to forget. Even if students spend a lot of time consolidating later on, after leaving the vocabulary list, they will not be able to pronounce or mispronounce words, and the meanings in Chinese and English may not match, or they only know the most basic meanings of words, making it difficult to apply them flexibly and hindering the improvement of their English proficiency. Therefore, to help students effectively learn English and meet the needs of college students in learning English, some scholars believe that it is necessary to break through technical barriers, stimulate students' interest in memorizing vocabulary, cultivate their habit of independent learning of English, and ultimately improve their English ability. For example, mind mapping is a very good approach.

A mind map is a visual representation with rich colors and a combination of text and images, allowing students to break free from traditional black and white notes and visually strengthen their thinking process, making the learning process, especially the process of learning English vocabulary, more vivid. The infinite extensibility and expandability of mind maps allow students to expand and process them according to their own needs, until they form a learning and thinking habit, and even use mind maps to record all aspects of life. This method provides new ideas for breaking through technological barriers and finding scientific memory strategies (Li, 2017).

The third conclusion is that cultural barriers are related to memory strategies, compensation strategies, and emotional strategies. The word order structure of Chinese is different from that of English, and there are also different idioms and fixed collocations. Students are easily influenced by fixed thinking patterns and mother tongue habits, which can transfer to the process of learning English vocabulary and hinder the accumulation of English

vocabulary.

In practical application, they unconsciously mix Chinese expression habits with English expression habits, simply transplant Chinese cultural habits into corresponding English conversation situations, making their thinking limited. For example, when Chinese says "I am in the car", English should mean "I am in the car". Many students will blurt out "I am on the car", which foreigners will understand as sitting on the roof. In Chinese, it is said to take medicine, but students tend to say "eat the medicine" instead of "take the medicine". These examples all reflect the hindering effect of mother tongue culture. Many students are not familiar with English culture, cannot use words, cannot remember, and cannot use proverbs. These all hinder the implementation of memory strategies, and at the same time, there is a greater need for the use of compensation strategies and emotional strategies.

The interference effect of Chinese language habits on English learning is mainly reflected in the fact that students cannot shake off their dependence on their mother tongue, which hinders their intelligence and abilities from being fully utilized. When students learn new English vocabulary, they often have a potential assumption that their mother tongue is consistent and corresponding to English, so Chinese inevitably interferes with English learning.

The transfer of student thinking, without summarization, is impossible to master knowledge, apply knowledge, and learn knowledge. Most students learn English vocabulary by comparing and comparing Chinese meanings, and during writing training, they always first use Chinese thinking or language to organize materials, and then translate sentence by sentence. They cannot think in English and cannot move forward without their mother tongue. In fact, it is not surprising that students or English beginners make such mistakes. These are some cultural errors, as well as deeper errors within the cultural context.

Chinese culture embodies collective cultural characteristics, which arise from different social development histories. Students need to flexibly develop and cultivate their intelligence and abilities, carefully consider, and correctly judge the differences between Chinese and Western cultures. The cultural differences between China and the UK affect English learning and communication in many ways. This requires students to tap into their intelligence, unleash their abilities, and learn English with agility, flexibility, and critical thinking (Zhang, 2011).

#### **4. Conclusions and recommendations**

In vocabulary accumulation, passing exams or preparing for employment became the biggest motivation for respondents to learn vocabulary. Many students don't have a strong multilingual ability that can promote their vocabulary accumulation. The most frequently used tools for respondents to learn vocabulary are classroom learning, browsing the web and WeChat official account; The most used methods are storytelling, rhythm, diary writing, and reciting one by one. Respondents believe that cultural barriers to vocabulary learning outweigh emotional barriers and technical barriers. The most used vocabulary learning strategies among respondents are compensation strategies, metacognitive strategies, and cognitive strategies, while social and emotional strategies are less commonly used. The average difference between male and female students in vocabulary learning strategies is not significant, but the differences in the use of specific strategies still exist. Students of different grades differ to some extent on the time of English vocabulary accumulation in college, the difficulties and obstacles they face, the experience of the strategies they have used and their effects, the expected solutions and the next goal. There is a significant correlation between vocabulary accumulation, vocabulary learning barriers, and learning strategies. The motivation, tools, and methods of vocabulary accumulation affect the existing vocabulary of students. The existing vocabulary of students is related to the size of emotional, technical, and cultural barriers they face. On the one hand, students' vocabulary learning strategies are influenced by vocabulary accumulation and learning barriers, and on the other hand, they continue to affect their vocabulary accumulation and learning barriers. Improving vocabulary learning strategies plays an important role in the future development of students' vocabulary. A plan has been proposed to help Chinese non-English major college students accumulate vocabulary, overcome vocabulary learning barriers, and improve vocabulary learning strategies.

The Chinese Ministry of Education or University administrators may establish online English listening and speaking exercises for the whole country, equipped with relevant online tasks and tests, to ensure that local university students in remote areas of the northwest have equal access to online English course resources. English teachers in Chinese universities may develop and distribute questionnaires to help students analyze the accumulation of English vocabulary and learning barriers, guide students to improve their metacognitive analysis level, and grasp their own learning situation. Non-English major students in Chinese universities may actively utilize online English vocabulary learning resources, conscientiously complete various online tests, actively interact with teachers and students, and improve their skills in listening, speaking, reading, and writing. English supervisors in universities may provide specialized English vocabulary reinforcement training courses for non-English major students, promoting communication between non-English major students and English major students, as well as foreign teachers. English council or clubs may actively strive to provide opportunities for non-English major students to study abroad and develop plans for vocabulary improvement during their study abroad visits. Future researchers may conduct a follow-up survey on whether the vocabulary accumulation level of non-English major college students has improved, and test whether the English vocabulary of students has improved by using questionnaire adjustment, simulation test, oral interview and other feedback methods, so as to provide data for future research.

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