

Training Strategies on English Vocabulary Memory of Elementary School Students: Based on the Laws of Children's Physical and Mental Development

Jihong Li^{1*}, Siting Wu¹, Yi Ma¹

¹ School of Humanities, Foshan University, Foshan, China

Email Address

1940714744@qq.com (Jihong Li)

*Correspondence: 1940714744@qq.com

Received: 4 February 2026; Accepted: 27 February 2026; Published: 15 April 2026

Abstract:

Memorization is the foundation of learning, and English words are the basic elements of English learning. Elementary school students are often faced with a large number of word memorization tasks in English learning, and how to effectively memorize and master these words is an important factor that affects the effectiveness of their English learning. Therefore, it is of great significance to explore English word memorization strategies suitable for primary school students to improve their interest and ability in English learning. This paper analyzes the physical and mental development characteristics of primary school students based on Piaget's cognitive development law and Ebbinghaus' theory of memory and forgetting curve in children's physical and mental development law, and understands the current situation and difficulties of primary school students in memorizing words and analyzes the reasons for them through questionnaire survey, in an attempt to provide useful guidance and suggestions for the memorization of elementary school students' English words through the theoretical and empirical analyses and improve the teaching effect of elementary school English words in English classroom.

Keywords:

Elementary English, Word Memory, Piaget's Law of Children's Physical and Mental Development, Training Strategy

1. Introduction

This section includes a brief introduction to current national and international research on word memory strategies and children's physical and mental developmental patterns, the importance of this research, previous correlational studies, research methodology, and a description of the structure of the article as a whole.

1.1. Brief introduction of the research area

At present, there are a lot of research on the correlation between word memorization strategies and children's physical and mental development patterns both at home and abroad. Overseas experts mainly focus on researching the effect of a certain memory strategy on people's retention of memorized words and the enhancement of language ability, and at the same time, they also analyze the influence of human physical and mental development on memory by combining psychology and other disciplines. Since the research on memory strategies by domestic experts is later than that of foreign experts, they basically focus on the same aspects as foreign experts, analyzing which memory strategy is more effective in retaining and improving language ability, but the research conducted by domestic experts is based on the problems of Chinese students' memory for words, and the conclusions reached are more suitable for solving the difficulties of Chinese students' memory for words than those of foreign experts. The conclusions are more suitable for solving the problem of Chinese students' difficulty in memorizing words than those of foreign experts. However, both domestic and foreign experts are trying to study effective memorization strategies to improve the efficiency and effectiveness of word memorization.

1.2. Significance of the study

When using word memory strategies to help children memorize words in the elementary school word classroom, it is necessary to teach them in conjunction with their physical and mental development, which can promote their learning interest and motivation, and at the same time, the use of some memory strategies can not only promote children to improve the efficiency of word memorization, so that children can memorize words more efficiently, effectively and persistently, but also promote children's construction and application of knowledge, as well as help them to develop their memorization skills. This is certainly one of the goals that teachers need to achieve when teaching vocabulary, namely, that students will be able to memorize the words they have been taught and be able to use them in simple ways, such as in everyday conversations, or in writing short essays.

1.3. Previous relevant research

Researchers at home and abroad have gone through many studies on vocabulary acquisition and memorization strategies.

Since the 1970s, foreign experts and scholars have conducted a lot of research on vocabulary acquisition.

The famous German psychologist H. Ebbinghaus was the first scholar who studied memory and forgetting. After a lot of experiments, he revealed the law of memory and forgetting, and put forward the very famous "Ebbinghaus Forgetting Curve". "That is, the participant curves are not related by a linear transformation." [2]

Surrounding this law, scholars began to conduct powerful research on how to effectively combat forgetting memory methods.

Yongqi Gu [8] analyzed the results of 27 classes of university students and came to several conclusions: First: oral repetition positively correlated with general proficiency, a finding in line with previous research; Second: visual repetition of new words was the strongest negative predictor of both vocabulary size and general proficiency; Third: Strategies aiming at vocabulary retention only correlated more with vocabulary size than with English proficiency in general. Qun Wu [7], in an

experiment with 4,850 college students, found that experimental Chinese college ESL students who adopted CRT efficiently remembered a great amount of English vocabulary (1,855.37 words in 20 days) in a short period of time with long lasting memorization (retention rate = 90.79%, two months delayed posttest), attest that CRT is a very effective L2 vocabulary acquisition technique.

Although domestic research on vocabulary acquisition started later than that of foreign countries, scholars are still very enthusiastic about vocabulary acquisition because of China's large population and the increasing demand for foreign communication.

In Chen Hua's study [9] on the use of children's word memorization strategies, through a questionnaire survey, when memorizing the semantics of the Chinese equivalents of words, they mainly used the Chinese-English translation strategy; when memorizing the pronunciation of English words, they mainly used the method of listening to cassette tapes, but with the increase of their age and the age of their English schooling, some of them also used the International Phonetic Alphabet (IPA) for memorizing. When memorizing the spelling of words, the students used 10 kinds of word memorization strategies such as rote memorization, syllabication, and word formation. Aiming at the current situation of word memorization of primary school students in China, as well as the problems of poor independent learning ability, fast forgetting speed, and single learning method, Li Jinhua [12] proposes two methods, namely, associative memorization method and intuitive teaching method, to improve the situation. Jiang Li [11] proposed several strategies to help students memorizing words and improving the efficiency of word memorization, namely, phonological combination, word association, decontextualization and contextualized recurrence strategies.

1.4. Research method

The purpose of this paper is to explore the strategies used and difficulties encountered by primary school students in English word memorization, by incorporating Piaget's law of cognitive development, to provide some insights and references for word teaching in the English classroom. To achieve this purpose, this paper adopts the method of questionnaire survey to collect the English word memorization of 45 primary school students, including some of their commonly used English word memorization strategies, as well as the difficulties and dilemmas they encountered in English word memorization. At the same time, this paper also synthesizes domestic and international studies on children's physical and mental characteristics, Ebbinghaus' theory of memory and forgetting curve, and various kinds of word memorization strategies, analyzing the influence of physical and mental developmental factors on primary school students' English word memorization, to put forward some suggestions to optimize the elementary school students' English classroom in terms of memorizing words.

1.5. Structure of the thesis

The research topic of this paper is the strategies used and difficulties encountered by primary school students in memorizing English words, by incorporating Piaget's law of cognitive development, with a view to providing some insights and references for teaching words in the English classroom. This paper is divided into six parts:

Part one: The introduction, including a brief overview of the current state of research on word memory strategies, the importance of research on word memory strategies, a brief discussion of previous research, and the method of investigation used in the paper.

Part two: The literature review, including the concept of word memory strategies, the classification of word memory strategies, the domestic and international studies on word memory strategies, and the effects of using these word memory strategies.

Part three: The explanation of children's physical and mental characteristics and their developmental patterns, including the elaboration of Piaget's Law of Physical and Mental Development, and how to apply the law in practical teaching.

Part four: The designment of the research, including the research design, the research object, research questions and research methods. Through analyzing the results of the questionnaire survey to understand some of the problems and reasons for primary school students' English word recall learning.

Part five: Based on the results of the study, combined with Piaget's law of physical and mental development, to put forward suggestions that can be applied to vocabulary teaching in the English classroom.

Part six: The overall summarize of the whole paper, and also elaborate the limitations and shortcomings of this paper.

2. Memory Strategy

This section focuses on the theories and definitions of memory strategies, as well as the examples of memory strategies, and describes how these memory strategies work and their effects.

2.1. The definition

Memory strategies are a set of methods and techniques used to improve the effectiveness of memorization. The definition of memory strategies was proposed by psychologists Craik and Lockhart in 1972, who argued that the quality and durability of memory depends on the level of processing of information, i.e., the degree to which the meaning of the information is processed. They categorized memory strategies into two types: shallow processing and deep processing. "Shallow processing repetition of analyses which have already been carried out, while deep processing involves deeper analysis of the stimulus. Only this second type of rehearsal should lead to improved memory performance. To the extent that the subject utilizes deep processing, memory will improve with total study time. It is suggested that the memory trace is better described in terms of depth of processing or degree of stimulus elaboration. Deeper analysis leads to a more persistent trace." [4] Therefore, for memorization, deep processing strategies should be used as much as possible, such as contextual memorization, associative memorization, and categorization.

2.2. The classification

There are a wide variety of types of memorization strategies, and this paper lists a few of the mainstream ones here.

2.2.1. The keyword method

Keyword mnemonics is a memory strategy developed by psychologist R.C. Atkinson. “By a keyword we mean an English word that sounds like some part of the foreign word. In general, the keyword has no relationship to the foreign word except for the fact that it is similar in sound. The keyword method divides vocabulary learning into two stages. The first stage requires the subject to associate the spoken foreign word with the keyword, an association that is formed quickly because of acoustic similarity. The second stage requires the subject to form a mental image of the keyword ‘interacting’ with the English translation; this stage is comparable to a paired-associate procedure involving the learning of unrelated English words. In summary, the keyword method can be described as a chain of two links connecting a foreign word to its English translation. The spoken foreign word is linked to the keyword by a similarity in sound, and in turn the keyword is linked to the English translation by a mental image.” [1] This approach is mainly used among second-language learners.

2.2.2. The categorization method

Categorization mnemonics is a method of grouping or categorizing things that need to be remembered according to certain rules or characteristics. The theoretical basis for this mnemonic strategy is the Information Processing Theory proposed by psychologist Miller in 1956. The theory suggests that “although the span of absolute judgment and the span of immediate memory impose severe limitations on the amount of information that we are able to receive, process, and remember. By organizing the stimulus input simultaneously into several dimensions and successively into a sequence of chunks, we manage to break (or at least stretch) this informational bottleneck.” [5]

Based on this theory, we can memorize words according to certain specific arrangements to allow us to memorize more vocabulary in a certain period of time, for example, we can categorize English words according to lexical properties, lexical meanings, roots, affixes, and so on, to reduce the burden of memorization and improve the efficiency of memorization.

2.2.3. The imagery method

Imagery mnemonics is a method of transforming things that need to be memorized into concrete images or scenes, using the power of vision to aid in memorization. The theoretical basis of this memory strategy is the dual encoding theory proposed by psychologist Pavio in 1971. The theory suggests that “concrete terms such as “house” derive their meaning through association with concrete objects and events as well as through association with other words, and thereby acquire the capacity to evoke both nonverbal images and verbal processes as associative (meaning) reactions, which could function as alternative coding systems affecting mediation and memory. Abstract terms such as “truth” on the other hand, derive their meaning largely through intraverbal experiences and more effectively arouse verbal associative than imaginal processes. But when people memorize abstract or concrete words, like MacDonald, they can do it in two ways, i.e., in the form of images, and through vocabulary, which can be done either separately or simultaneously. After the experiment, according to the result, memory for pictures tended generally to suffer at the fast rate but the effect was significant only in the sequential memory tasks, presumably because the verbal code essential to performance was least available. The slow rate benefited picture memory most, presumably because both memory codes could be utilized. Memory for

abstract words was least affected by rate, presumably because only (or mainly) the verbal code was involved. So when recalling, combining the two ways of memorizing is more effective than using only one method.” [6]

According to this theory, we can combine words with images when we use this memorization strategy to enhance the effect of students' memorization of words. For example, we can associate English words with images or stories related to them to form vivid associations, thus enhance the impression and memorization of the words.

2.3. The application of word memory strategies

Regarding the keyword mnemonic method, Zhu Jun, Li Xuan, and Cui Jiayuan [17], through the statistics of the performance of two groups of high school sophomores in an experiment, found that not only the keyword mnemonic method group outperformed the control group in the immediate and delayed tests of the spelling test (the same test was administered again a week later), but also similar results were obtained in the immediate test of the reading comprehension test.

In an experiment conducted by Li Xiaoyu [13] in a sixth-grade elementary school, the students' scores were improved by teaching the categorization strategy, and after calculating the standard deviation, it was found that the standard deviation of the class had a tendency to decrease, which indicated that after the categorization method for word memorization, the individual differences of the class were gradually reduced in the examination, and the scores were constantly concentrated.

Picture mnemonics, in Ding Zhirong's experiments [10] on 69 native Chinese speakers from Southwest University, these students were divided into three groups, one for pictures, one for words, and one for art characters. The test was divided into four stages: judgment, learning, distraction, and recall, and the examiners were required to complete these stages three times. The results were analyzed after the test and it was found that the picture group was significantly better than the other two groups in correctly recalling the semantic meaning of the words.

According to the above experiments, it can be seen that the use of mnemonic strategies has a very significant increase in the students' performance in the exams compared to those without the use of mnemonic strategies.

3. Laws of Children's Physical and Mental Development

This section focuses on the theories about children's physical and mental development covered in this paper and how they can be used in the classroom.

3.1. The definition

Piaget's theory of cognitive development is a theory of cognitive development developed by the Swiss psychologist Piaget. In the theory, Piaget proposed that human cognitive development occurs through constant interaction with the outside world, leading to harmony with the environment. He categorized human cognitive development into four stages, each with its own specific cognitive structure and way of thinking. These four stages are: “The sensorimotor stage, the stage where child acquire language, which enhances their social and intellectual development. The preoperational stage, the stage that the child is not yet able to conceptualize abstractly and needs concrete physical situations also the development of semiotic functions which develop the language. During this stage the child language, thinking,

imagination and problem solving develop faster as child can be able to work with images and symbols. The child can recognize the properties of the object even if they might be changed around and look different. The child at this stage find it too difficult not to accept the evidence in their eyes. Children's vocabulary increases and their sentences progress from one and two-word phrases to complete full sentences. Children can take in other points of view, and take into account more than one perspective. The concrete operations stage, in the stage that problem solving and reasoning is powerful enough to last the rest of life. Child is capable of creating logical structures that explain his or her physical experiences and abstract problem solving is also possible at this stage. During this stage the child is able to successfully perform task relating to the conservation of matter, the transitive form of reasoning and classification of objects. And the formal operations stage, when children can now generate the potential solutions to the problems in a systematic fashion. The social context is more important in this stage. The learner at this stage is able to concentrate their thoughts on things that have no existence. The child can now perform the variety of task involving use of hypothesis. The learner's thoughts can be fostered by placing learner in a situation where they have to solve problems." [3]

3.2. The application of the laws in classes

Teachers need to combine the above theories to implement teaching, and the following are some applications of teaching based on Piaget's theory of cognitive development in the law of children's physical and mental development.

First: Teachers need to understand the cognitive stage of students and their characteristics clearly when teaching, select suitable materials and presentation methods for them and organize reasonable teaching activities. Elementary school students are in the cognitive stage from the pre-operational stage to the concrete operational stage. Therefore, when teachers present materials, they should present some objects or materials related to words to enhance students' interest and facilitate students' participation in teaching activities.

Second: Teachers need to simplify complex concepts to a level acceptable to children. Because of the huge difference in cognitive development levels between adults and children, many concepts that are self-evident to adults are difficult for children to understand. When teaching new concepts, teachers need to simplify the concepts and explain the details, content and limitations to children to make them more acceptable to them.

Third: Teachers should pay attention to the transfer from old knowledge to new ones when teaching. "According to Piaget Assimilation is the components of the adaptation when the information arises that can fit into the learner existing knowledge is added into the learners' cognitive structures. This information adds to extends the learners mind structures or cognitive structures.it actually occur if the knowledge that learner is learning is not too dissimilar to learners existing knowledge; it can be assimilated or added to the existing cognitive structures. Then the learner's cognitive structures are extended `meaning the new knowledge add to what learner is already know." [3]

4. Research Design and Analysis of the Results

This part discusses the object of the study, the research questions and the research methodology in turn. As well as the data obtained from the results of the study, it

elaborates on the problems encountered by primary school students in word memorization today, and the root causes of these problems according to the Piagetian Law of Cognitive Development in the Law of Physical and Mental Development of Children.

4.1. Research target

The survey object of this paper is mainly for the students of four elementary schools near a place in the Luohu District of Shenzhen City, the age distribution of the students is 6-12 years old, the students in this place have English courses, and the classroom are required to memorize English words, so they can be included in the scope of the questionnaire's research object, a total of 45 students participated in this study.

4.2. Research problems

The main questions to be investigated in this paper are: First: What kind of word memorization strategies are used by today's elementary school students? Second: What methods are often used by elementary school students to review vocabulary words? Third: What kind of difficulties do elementary school students encounter when memorizing and learning words?

4.3. Research method

In this paper, the data required for the study was obtained by administering a questionnaire to the 45 students mentioned above, and by giving them a questionnaire on a one-to-one basis. A total of 20 questions were set, ranging from the memorization strategies used by the children, the methods used when reviewing vocabulary, and the challenges encountered when memorizing.

4.4. Statistics results

The results obtained from 45 questionnaires are given below:

In this paper, memorizing words is divided into two parts: memorizing word pronunciation and memorizing word spelling.

Regarding the statistics on the methods of memorizing the pronunciation of new words, among the 45 questionnaires surveyed, 24.4% of the students used the method of following the recording to memorize, 46.7% memorized by memorizing the International Phonetic Alphabet (IPA), and 28.9% memorized by using pinyin, which is similar to the pronunciation of the words.

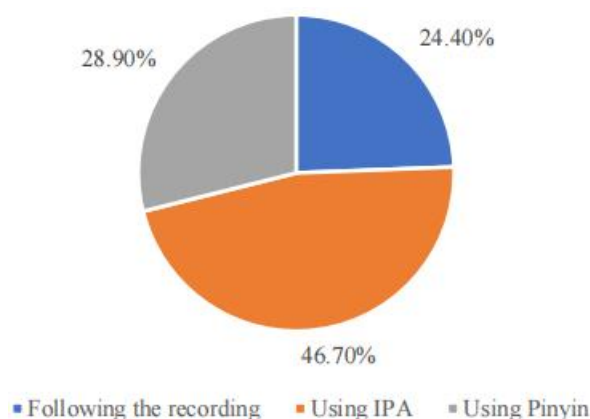


Table 1. Methods of memorizing the pronunciation.

When asked about the methods of memorizing the spelling of words, 44.4% of the students used rote memorization, 22.2% used familiar and similar words, 13.3% used word formation, 11.1% used the pronunciation of words, and 8.9% used phonetics.

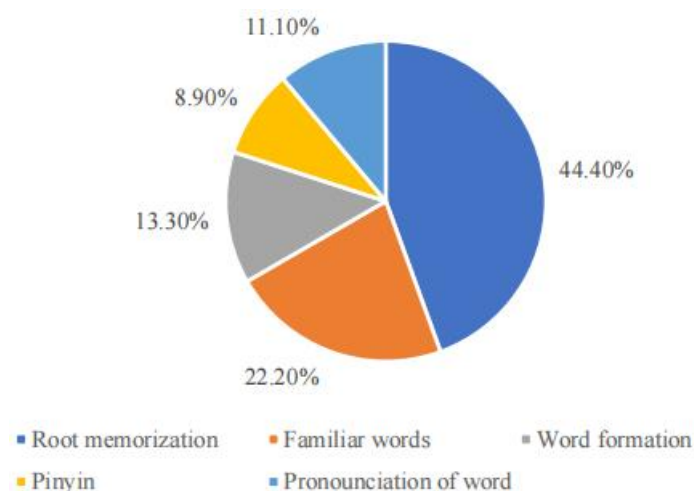


Table 2. *Methods of memorizing the spelling.*

When asked what word memorization strategies were used to review vocabulary, 22.2% of the students used a combination of listening, speaking, reading, and writing to review vocabulary, 28.9% used sentence building to review vocabulary, 31.1% reviewed vocabulary by combining words with key words and pictures, and 17.8% reviewed vocabulary through mind mapping.

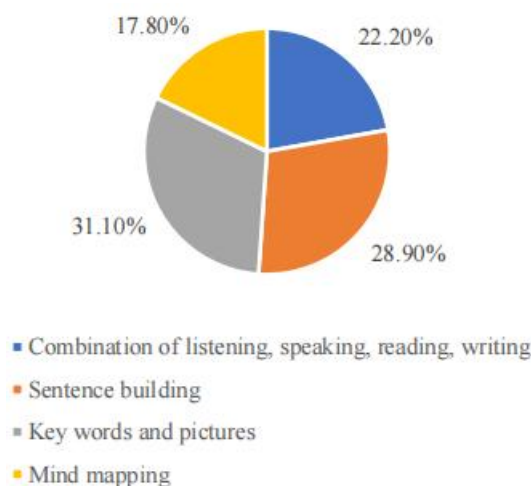


Table 3. *Memorization strategies used in review.*

In the statistics asking about the challenges encountered when memorizing vocabulary words, 13.3% of the students thought that the biggest challenge in memorizing words was the ease of forgetting, 35.6% thought that it was the process of memorizing words that was difficult, 20% thought that it was the fact that it was difficult to spell the words memorized, and 31.1% thought that the process of memorizing words was very uninteresting, and thus they were not willing to spend a lot of effort in memorizing vocabulary words.

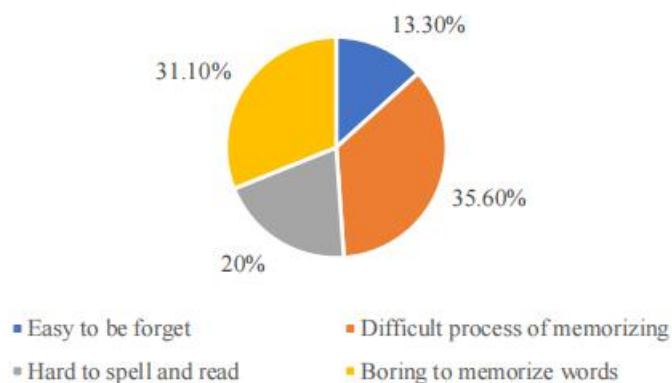


Table 4. Challenges encountered when memorizing words.

4.5. Analysis of problems and root causes

This section includes the problems and root causes based on the statistics of the result.

4.5.1. Problems

In terms of memorizing the spelling of words, although some students have used some word memorization strategies to memorize the spelling of words, such as the keyword method and the word formation method, a relatively large number of students still use rote methods to memorize words.

When asked about the difficulties encountered in memorizing words, most of the students were not very interested in memorizing words. At the same time, some students think that the process of memorizing words is very difficult.

4.5.2. Root causes

Most students tend to memorize the spelling of words by rote memorization. This paper suggests that this is due to the fact that teachers may only teach students the spelling, meaning, and pronunciation of words, but do not teach students how to memorize the spelling of words more efficiently using word memorization strategies.

To address the problem that most students are not interested in memorizing words, this paper suggests a few reasons why this may be the case.

First: Incorrect methods of word memorization. Most students memorize words by rote memorization, which takes a long time and requires a lot of effort to achieve the effect of memorizing words. More importantly, this way of memorizing is easy to forget, which makes students lose the motivation to memorize words, producing aversion and resistance.

Second: The word content provided is uninteresting. It is difficult to arouse students' interest in memorizing words by presenting only the spelling, pronunciation and meaning of the words while ignoring the context, usage and cultural background of the words. At the same time, because of the neglect of the context of the words, it is difficult for students to use the right words in the context to express themselves correctly when using the words.

Third: Lack of external motivation and guidance. Most students memorize words by their own efforts, without guidance and encouragement from teachers or parents, and without cooperation with peers, so they inevitably feel lonely and helpless in the

learning process, which makes them lack confidence and motivation in memorizing words, and thus fail to show interest in memorizing words.

5. Training Strategies on English Vocabulary Memory Based on The Laws of Children's Physical and Mental Development

This section focuses on some methods and suggestions on how to develop children's word memorization strategies by incorporating Piaget's laws of cognitive development in the laws of children's physical and mental development.

5.1. Stimulating students' interest in learning English words by encouraging

When students are being encouraged, they may gain more interest in learning English words. It is a positive factor for students to remember the words.

5.1.1. Setting examples for others to learn with

Teachers can teach their commonly used vocabulary memorization strategies by example, or set up a student in the class who has outstanding ability in the field of English vocabulary memorization as a role model, so that students can have a model to refer to for learning vocabulary memorization strategies. In this way, students can either follow the teacher, or follow the model been set up, or choose an appropriate vocabulary memory strategy according to their own level of ability, or based on the two models provided above to create a vocabulary memory strategy that is more suitable for them. Either way, the learning of vocabulary memorization strategies will allow students to participate in the classroom and increase their interest in word memorization.

5.1.2. Rewarding for improvement

At the end of the examination, teachers should give some encouragement or reward to the students who have improved. "Although moderate criticism and punishment can be effective in promoting learning in certain situations. However, praise, encouragement, and rewards are generally more effective in motivating learning than criticism, blame, and punishment." [14] At the same time, by rewarding these students, teachers can also make these rewarded students serve as role models for other students to work hard, thus encouraging them to put more effort into their studies.

5.1.3. Creating active class atmosphere

Since students cannot grasp the correct usage of words in real-world situations just by following along. Therefore, teachers should create a suitable environment for dictation and reading. "Teachers can create a variety of rich teaching activities, such as reading poems aloud, acting in stage dramas, singing English songs, and so on, so that students can know how to spell and use words correctly in context in these activities. In the aspect of reading, teachers can read a book together with students; or follow the form of small groups, each group recommending a favorite book and holding a weekly lesson to share the experience." [16] These are ways to create a more positive and active classroom and to increase students' interest in reading and vocabulary.

5.2. Emphasizing timely and effective review

As remembering words is a repetitive process, students need to review the words several times timely and effectively, so that students can eventually remember the words in a longer period.

5.2.1. Reviewing words immediately after learning

According to the theory of Ebbinghaus's Memory and Forgetting Curve, "after 20 minutes of memorizing new knowledge, the amount of forgetting has already reached 50%, and after 8 hours, the rate of forgetting has reached 70%, and after 1 day, only about 25% can be left." [16] It can be seen that the initial forgetting rate is the fastest after new words are taught to students. Therefore, after teaching new words, teachers should organize students to review the learned words in a short time to slow down the speed of word forgetting effectively.

5.2.2. Through repetition reviews to keep words being memorized in a longer period

Through constant repetition, words can be memorized by students for a longer period, to achieve the goal of memorizing words deeply. According to research, "the first review in about 9 hours is the most effective, at this time for word memorization, it can make the words memorized in short-term memory transferred to long-term memory, compared with short-term memory, long-term memory can be remembered for a longer period. If the teacher organizes reviews at least 5 times, the students will not forget the words they have been taught. By repeating the above steps when teaching other new words, the student's vocabulary will increase day by day. [16]

5.3. Applying meaningful and interesting materials flexibly

By applying meaningful and interesting materials, students can remember the words more easily compared with only by giving the word list to students.

5.3.1. Organizing the words learning in particular ways

When teaching word memorization strategies, the teacher should give the students materials according to the word strategies and present the words in a specific order to the students. For example, when teaching keyword memorization strategies, teachers should not only give the words and their Chinese meanings, but also give the keywords and corresponding pictures, or the teacher and students can search for the keywords together. When teaching categorization memory strategy, teachers can first categorize the vocabulary that is going to be taught according to certain types. In this way, students will be able to memorize words according to the taught word memorization strategies, rather than just relying on their rote memorization methods, thus achieving the goal that students will be able to memorize the vocabulary they are taught more efficiently and deeply using these memorization strategies.

5.3.2. Adopting situational approach in words learning

When teachers teach vocabulary, it is better to teach using realistic objects, such as giving objects related to the words taught, such as tables, chairs, chalk, blackboards, giving related pictures, and so on, so that students can memorize more easily. According to Piaget's Law of Cognitive Development, "students between the ages of 6 and 12 are in the stage of preoperational and formal operations, and they can perform some abstract logical operations, but they still need to be supported by concrete things." [14] Therefore, when teachers teach words, they have to teach according to the students' cognitive pattern, so that students can accept the knowledge

taught better. At the same time, the organization of these meaningful materials can also slow down the rate of word forgetting, so that students' word-learning process become more efficient.

5.3.3. Teaching slightly above-competency materials

Teachers need to assess the ability level of their students before teaching. "Vygotsky's theory states that children have a zone of proximal development and that, with proper guidance, children are able to move forward within the gaps in their developmental zones." [15] Thus, after teachers have assessed students' abilities, they should teach by giving them materials that are slightly above their abilities to promote the continuous development of their abilities.

6. Conclusions

This section focuses on the main findings of the full article, as well as some of the article's shortcomings and the need for more in-depth research in the future.

6.1. Major findings

This paper focuses on the cultivation of word memorization strategies for primary school students and discusses them in the context of the Ebbinghaus Memory Forgetting Curve and the Piagetian Law of Cognitive Development in the Law of Physical and Mental Development of Children. Through the questionnaire survey, it is found that most of the primary school students use the International Phonetic Alphabet (IPA) spelling method to memorize the pronunciation of words, instead of just memorizing the pronunciation of words in the recordings, which will help the primary school students to know the pronunciation of words in the future by just checking the phonetic symbols of the words in the dictionary when they can't spell them. This greatly improves children's ability to learn independently.

But for memorizing the spelling of words, although some students have been using some word memorization strategies to assist them in memorizing words, most students are still using rote memorization to memorize vocabulary, which is a method of memorizing vocabulary that requires more effort than using of memorization strategies for memorization. At the same time, rote memorizing is more easily to be forgotten than using memorization strategies to memorize words.

In addition, most students think that the biggest problem in memorizing words is that they are not very interested in memorizing words and the process of memorizing words is very difficult. Therefore, teachers need to teach word memorization strategies more interestingly and vividly, to develop students' habit of using the taught word memorization strategies.

6.2. Limitations and prospect for further study

Although this paper integrates some theories related to psychology and how some mainstream memory strategies work, it may not be particularly representative because it only investigates the word memory strategies commonly used by today's elementary school students and the difficulties they encounter when memorizing words through questionnaires, and the number of questionnaires collected is relatively small. Therefore, in future research, a larger sample size is still needed, and it is necessary to consider that some students may encounter more complex and comprehensive problems that are not reflected in the questionnaires, so by totaling these

comprehensive problems, the difficulties encountered by today's elementary school students in word memorization can be better reflected, and some underlying causes of these problems and suggestions for solving them can be provided.

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this article.

Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

References

- [1] Atkinson. R.C. Mnemotechnics in second-language learning. *American Psychologist*, 1975, 8, 821-828.
- [2] Averell. L.; Heathcote. A. The form of the forgetting curve and the fate of memories. *Journal of Mathematical Psychology*, 2011, 55, 25-35.
- [3] Baken, L. The Piaget theory of cognitive development: an educational implications. *Educational psychology*, 2014, 1, 1-8.
- [4] Craik F.I.M.; Lockhart. R.S. Levels of processing: A framework for memory research. *Journal of Verbal Learning & Verbal Behavior*, 1972, 6, 671-684.
- [5] Miller. G. A. The magical number seven plus or minus two: some limits on our capacity for processing information. *Psychological Review*, 1994, 2, 343-352.
- [6] Paivio. A. Mental imagery in associative learning and memory. *Psychological Review*, 1969, 3, 241-263.
- [7] Wu, Q. A rote strategy in memorizing vocabulary for ESL learners. *Procedia-Social and Behavioral Sciences*, 2014, 143, 294-301.
- [8] Gu, Y.Q.; Robert, K.J. Vocabulary learning strategies and language learning outcomes. *Language learning*, 1996, 4, 643-679.
- [9] Chen, H.; Zhang, Y.F. A Study on English Vocabulary Memory Strategies of Chinese Children. *Foreign Languages Research*, 2001, 04, 100-106.
- [10] Ding, Z.R. The Picture Superiority Effect in English Word Memory. *Southwest University*, 2024, 8-35.
- [11] Jiang, L. Emphasizing Memory Strategy Instruction to Optimize Junior High School English Vocabulary Teaching. *English Teachers*, 2019, 16, 73-75.
- [12] Li, J.H. Research on the Current Situation and Countermeasures of Vocabulary Teaching in Primary School English Education in China. *China Extra-curricular Education*, 2014, 13, 180.
- [13] Li, X.Y. The Application of Categorization Memory Method in Primary School English Vocabulary Teaching. Ningbo University, 2020, 16-37.
- [14] Pi, L.S. Educational Psychology (3rd ed.). Shanghai: Shanghai Educational Publishing House, 2004, 138-139, 165.

- [15] Sternberg, J.R. Educational Psychology. Beijing: China Light Industry Press, 2003, 56.
- [16] Wang, Y. The Application of Ebbinghaus' Forgetting Curve Theory in Senior High School English Vocabulary Teaching. *Campus English*, 2022, 43, 3-5.
- [17] Zhu, J.; Li, X.; Cui, J.Y. An Empirical Study on the Effectiveness of the Keyword Method in Senior High School English Vocabulary Learning: With Spelling and Reading Comprehension Tests as Examples. *Journal of Lvliang Education Institute*, 2019, 03, 93-97.



© 2026 by the author(s); licensee International Technology and Science Publications (ITS), this work for open access publication is under the Creative Commons Attribution International License (CC BY 4.0). (<http://creativecommons.org/licenses/by/4.0/>)