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## Relationship between Language Learning Strategies and Achievement of Chinese EFL Learners

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### ABSTRACT

With regard to the relationship between Chinese English language learners' performance and language learning strategies for university-level students, most of the current studies take college students majoring in English as the research object, and there are relatively few studies in which the research object is college students in higher vocational colleges. Thus, this study selected non-English majors in X higher vocational colleges as the research object, aiming to investigate the current situation of language learning strategies used by students in higher vocational colleges, and to analyze the correlation between language learning strategies and English performance. Questionnaire and interview methods were used as research methods, in which the language learning strategies questionnaire included four parts: metacognitive strategies, cognitive strategies, communicative strategies and affective strategies. The correlation analysis and regression analysis of the data are conducted to explore the correlation between language learning strategies and English achievement. The results showed that students' use of language learning strategies was at a medium frequency (Mean = 3.13), and there was a medium high positive correlation between language learning strategies and English scores ( $r = 0.778^{***}$ ), indicating that the use frequency of language learning strategies was positively correlated with learners' scores to some extent. Based on the results of this study, it is expected to produce some inspiration for English learning and teaching. Based on the results of this study, it is expected to produce some inspiration for English learning and teaching.

**Keywords:** Language Learning Strategies; English Achievement; Correlation Analysis; Regression Analysis

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# 1. Introduction

Research on language learning strategies (LLSs) began in the 1970s, and language learning strategies have gradually become the focus of linguistic and psychological research at home and abroad. In recent years, the research on basic education has shifted from teachers' "teaching" to students' "learning", and education has paid more attention to the cultivation of students' independent learning ability, and in the aspect of English learning, students have to master language learning strategies<sup>[1-4]</sup>. Learning strategy is one of the six elements of the English curriculum, the development of students' ability to use learning strategies is the main way to improve students' learning ability, is an important part of teaching, and is also an important part of the core qualities of the English discipline. At the same time, the role of the teacher is also changing. Teachers should change their roles from administrators and controllers to diagnosticians, trainers, coaches, coordinators, language learners and researchers. Therefore, the responsibility of teachers is not only to teach knowledge and skills, but also to teach learning strategies. This means that teachers should not only "teach to fish", but also "teach to fish"<sup>[5-8]</sup>.

With the rise and development of humanistic psychology, educational researchers gradually realize the importance of "human-centeredness", turn to "student-oriented" teaching, and pay attention to the individual differences of students. The focus of research on second language acquisition has gradually been on the learner's factors. Humanistic psychology, cognitive psychology and other theories provide the theoretical basis for the study of individual differences in learners. Language learning strategies are one of the learner factors. With the in-depth study of language learning strategies, a large number of domestic and foreign researchers have begun to study the relationship between learning strategies and successful and unsuccessful learners<sup>[9-12]</sup>.

English language teaching in China is mainly centered on the content of English textbooks, and language knowledge and language skills are the main aspects of teaching, without much involvement in other aspects. Teachers in the process of English teaching are still centered on the teaching content, "pouring" the knowledge and skills to the students, with the teacher in the dominant position and the students as the passive absorbers of knowledge, still neglecting the students' subjective position, ignoring the students' attention

to and cultivation of the use of learning strategies. This is obviously contrary to the provisions of the English curriculum standards. In the process of students' learning, teachers should guide students to develop good learning habits and master personalized and efficient language learning strategies, which can help to enhance students' ability for independent and autonomous learning<sup>[13-16]</sup>. At the same time, achievement is one of the manifestations of students' learning outcomes, so it is necessary to study the correlation between language learning strategies and English achievement. This study can, to a certain extent, help high school English teachers to change their roles as teachers, change their teaching concepts, make the English classroom student-centered, pay attention to students' independent learning ability, pay attention to individual differences of students, pay attention to the use of language learning strategies by students, and practice the curriculum standards<sup>[17-20]</sup>.

This study summarizes the connotation and classification of English learning by combining the theoretical foundations of constructivism, information processing and language learning strategies. On the basis of previous theoretical studies, research related to English learning strategies is carried out. A questionnaire survey was conducted on college students (taking X higher vocational college as an example) to understand the overall situation of their English learning strategy use. And through correlation analysis and regression analysis, the correlation between the English learning strategies of college students in higher vocational colleges and their academic performance was explored to analyze the intrinsic relationship between them and their English performance, so as to enrich the theoretical research on English learning.

## 2. Theoretical Foundations

### 2.1. Constructivist Theory

Constructivism, also known as structuralism, is an important school of psychology and also has considerable influence on philosophy. The basic claim of this school of thought is that the subject does not have access to the external world, but can only develop knowledge by organizing experience through the use of internally constructed basic principles of knowing. According to constructivism, "Learning is a process in which learners actively process new information

and construct meaning (or representations of knowledge) on the basis of their previous knowledge and experience in a certain socio-cultural environment”<sup>[21]</sup>. Because of this, it is not possible to make typical, structured, non-situational assumptions about learners’ mastery of the domain of knowledge; knowledge is not a uniform conclusion, but a construction of meaning. Therefore, even if the same knowledge is learned, the information processing activities carried out by the learner are different and the final constructed meaning of the knowledge is different.

Learning means that each learner constructs his or her own view of something from his or her own perspective, in which the teacher only plays a supporting role. In general, learners do not passively receive external information, but actively select and process it. Instead of starting from the same background, learners start from different backgrounds and perspectives. Instead of being uniformly guided by the teacher to accomplish the same processing activities, it is a process of constructing one’s own meaning through unique information processing activities with the assistance of the teacher and others. This process of construction is a process of personal construction.

Starting from the above premise, constructivism proposes its own unique theory of learning, then this paper describes the three main learning theories related to this study as follows:

(1) Individual learning requires the support of prior knowledge

According to constructivism, it is impossible for an individual to assimilate new knowledge if he or she does not have a foundation of previously formed knowledge structures. The more we know, the more we can learn. Therefore, the instructor must try to create a connection to the learner’s current state and must provide the learner with a path based on prior knowledge.

(2) Learning takes time

According to constructivism, learning is not instantaneous; for knowledge, learners need to review, think and apply it many times, and this process cannot be completed in 5–10 minutes.

(3) The purpose of learning is to construct the individual’s own meaning, not to repeat the meaning of others to get the right answer.

## 2.2. Information Processing Theory

In the information processing theory, Gagne’s delineation of the eight stages of learning activities and the detailed elaboration of cognitive strategies in the five types of learning outcomes provide clear and recognizable operational steps for the construction of the language learning strategy training model in this study<sup>[22]</sup>.

(1) Motivation Stage

For learning to take place, the learner’s motivation should be aroused first. It is important to connect the goals that the learners want to achieve (the expectations in their minds) with the actual learning activities of the students, and to stimulate the students’ interest in learning.

(2) Understanding stage

In the understanding stage, the learner’s mental activity is mainly attention and selective perception. The learner selects information according to his motives and expectations, and he focuses his attention on stimuli that are relevant to his learning goals.

(3) Acquisition stage

The acquisition stage refers to the fact that what has been learned enters the short-term memory, that is, the information is encoded and stored. The information that has gone through the encoding process is not exactly the same as the initial information; sometimes the information is regularized and sometimes it is distorted. Teachers need to help learners to adopt better encoding strategies to facilitate the acquisition of information.

(4) Retention stage

After the acquisition stage, the encoded information will go into the storehouse of long-term memory, which may be permanent, and it should be noted that the capacity of long-term memory is large, and so far no experiments have confirmed reaching the limit of memory capacity.

(5) Recall stage

Also known as the retrieval stage of information, clues are important in this stage, and the clues that provide recall will help one to recall information that is difficult to recall. Therefore, at the beginning of learning, teachers should provide some clues that are favorable to memory and recall, and teach students the methods and strategies of retrieving and recalling information.

(6) Generalization stage

The extraction and application of what has been learned is not limited to the same learning situation, people often have to use what they have learned in changing situations or real life, which requires the realization of the generalization of learning. For learners to transfer the acquired knowledge to new situations, they first rely on the generalization of knowledge and also on the cues for extracting knowledge.

(7) Operational phase

It is also the stage of the occurrence of reactions so that they are expressed in operational activities, and therefore, the goodness of the assignments is a reflection of the effectiveness of learning. Of course, it is not possible to use individual assignments to indicate general performance. Teachers have to provide various forms of assignments in this stage so that learners have the opportunity to express their operational activities.

(8) Feedback stage

Through manipulative activities, learners recognize whether their learning has achieved the intended goal. This feedback of information is an important component of reinforcement. The learner sees the result of the learning and is thus internally reinforced, and the process of reinforcement, which is important for human learning, confirms what was expected, thus bringing the learning activity to an end.

### 2.3. Language Learning Strategies

While the traditional view of education emphasizes the teaching and learning of language knowledge, modern education has come to realize that the most fundamental purpose of education is to enable students to become independent, autonomous and effective learners. In the field of foreign language teaching, as the focus of teaching has shifted from “teacher-centered” “how to teach” to “student-centered” “how to learn”, the characteristics and role of the learner subject have become more and more important. “The study of the characteristics and role of the learner subject has also become a hot spot in this research field. It is in this context that the study of language learning strategies has emerged.

Language learning strategies can be defined as specific behaviors or actions taken by learners that make language learning easier, faster, more enjoyable, more self-directed, and more effective and enable learners to learn by example.

Language learning strategies are categorized into two major groups and six subgroups<sup>[23]</sup>:

(1) Direct strategies

a. Memory strategies are used for storage and recall of information.

b. Cognitive strategies act directly on the comprehension and output of language.

c. Compensatory strategies are used to overcome communication barriers caused by a lack of language knowledge

(2) Indirect strategies

a. Metacognitive strategies help learners plan, monitor and evaluate cognitive and learning processes.

b. Affective strategies help learners to regulate emotions, motivation, attitudes, etc.

c. Social strategies enable learners to learn and understand the target language culture through interaction with others.

There are two main reasons why learning strategies are important in foreign language learning and teaching:

(1) By examining the learning strategies used by students, teachers can gain a deeper understanding of the metacognitive, cognitive, social and affective processes involved in language learning.

(2) If teachers can target unsuccessful language learners with learning strategies, they have the potential to become more successful language learners.

It is based on such considerations and starting points that research on foreign language learning strategy training has been carried out.

Based on constructivism theory, information processing theory and language learning strategies, the Chinese English (EFL) language learning strategy model studied in this paper is constructed as shown in **Figure 1**.

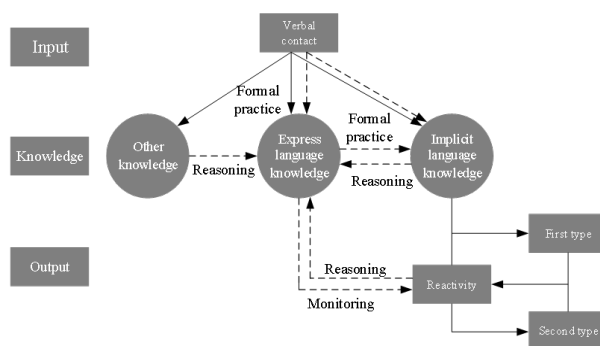


Figure 1. English learning strategy model.

### 3. Study Design

The main content of this section of the paper includes three aspects of the research problem, research object and research methodology involved in the study, which will be described in detail below.

#### 3.1. Research Questions

This paper focuses on the use of LLSs by college students and its correlation with English for Chinese (EFL) academic performance, and explores the following questions:

(1) What is the current status of the use of vocabulary learning strategies in the process of vocabulary learning among college students in higher vocational colleges?

(2) What is the relationship between English language learning strategies and English achievement of college students in higher vocational colleges?

#### 3.2. Subjects of the Study

##### 3.2.1. Research Object of Questionnaire Survey

This study takes X higher vocational college students as the research object for questionnaire survey, which is divided into four majors: acting, drama, film and television literature, animation, and visual communication art. Among them, 55 majored in visual communication art, 42 majored in acting, 78 majored in animation, and 51 majored in drama, film and literature, totaling 226 people.

##### 3.2.2. Interviewing Research Subjects

In this study, based on the reference to the students' achievement scores, 10 students were randomly selected from each of the high grouping (roughly the top 25% of the total score ranking), the middle grouping (the middle part of the total score ranking) and the low grouping (roughly the bottom 25% of the total score ranking), for a total of 30 students to be the subjects of the interviews. The subjects of the teacher interviews were from the English teaching and research group of a college in a university, one was a first-year teacher (a novice teacher) and the other was a second-year teacher (a teacher with a longer teaching experience).

##### 3.2.3. Reasons for the Choice of Research Subjects

First, with college students as the research object, fewer studies have been conducted on English vocabulary learning strategies, and most of such studies have focused on junior and senior high school students, college students majoring in English, general undergraduate majors, etc., with a few focusing on students of X Higher Vocational Institutions (XHVI), so the study of college students of XHVI is conducive to the enrichment of the current research object.

Secondly, as a special group of college students, the English education of X higher vocational college students has always been on the fringe of university education, but the English learning of higher vocational college students is also very important.

#### 3.3. Research Methodology

This study mainly used a combination of quantitative and qualitative research methods, mainly including questionnaire survey method for students and interview method for students and teachers.

##### 3.3.1. Questionnaire Method

The questionnaire of this study is divided into four parts: The first part is to count the basic information of the respondents, which mainly includes four questions: school number, grade, major and gender.

The second part is a survey about English learning concepts, which includes three sub-questions.

The third part is a survey scale about English learning strategies, which is divided into 3 dimensions of metacognitive strategies, cognitive strategies, and social/emotional strategies, with 38 questions. The correspondence between the learning strategies of each dimension and the questionnaire's topic settings is shown in **Table 1**, and the respondents ticked and selected the corresponding list of vocabulary learning strategies used according to the actual situation. The list is based on a five-point Richter scale, with the numbers "1" to "5" representing "not at all", "not at all", "sometimes", "sometimes meets (sometimes does not meet)", "basically meets", and "fully meets".

The fourth part of the questionnaire is a question specially set for the English learning situation of college students in X higher vocational colleges and universities. The question mainly investigates the ways and methods of English learning and the problems of students of different majors.

**Table 1.** The corresponding relationship between learning strategies and questionnaire questions.

Primary Index	Secondary Index	Item	
English learning strategy	Metacognitive strategy	Develop a planning strategy	Q4, Q5
		Self-regulation strategy	Q6
		Self-monitoring strategy	Q7, Q8
		Selective attention strategy	Q9
	Cognitive strategy	Rote memory strategy	Q10, Q11 Q12
		Classification strategy	Q15, Q16
		Context strategy	Q17, Q18, Q38
		Look up STH in the dictionary	Q19, Q20, Q21, Q22
		Guessing strategy	Q23, Q24, Q25, Q26
		Do exercise strategies	Q27
Social/emotional strategies	Association and association strategies	Q28, Q35, Q36, Q37	
	Note-taking learning strategy	Q13, Q32	
	Translation/Native language strategy	Q33, Q39	
	Word formation strategies	Q14	
	Cooperative learning strategies	Q29, Q31	
	Self-motivation strategy	Q30, Q40	
	Help-seeking strategy	Q34, Q41	

### 3.3.2. Interview Method

In order to be able to more fully understand the current use of English learning strategies among college students in higher vocational colleges and make up for the shortcomings of the questionnaire survey, this study conducted interviews with college students in higher vocational colleges and classroom teachers.

#### (1) Student Interviews

After counting the students' English scores, this study took 10 students from each of the high group, middle group and low group, totaling 30 students for interviews. In addition, the 10 student representatives in the high, middle and low groupings are from different majors, so as to ensure the scientific nature of the selection of the research subjects and the results of the study. The questions of the student interviews mainly include:

The biggest problems they encountered in their usual English and English vocabulary learning;

Which method they often use to learn English vocabulary and what is the reason and effect of using this method; and

What kind of guidance they want teachers to give them and what kind of learning methods they want them to teach.

#### (2) Teacher Interviews

The teachers' interviews were conducted with two English teachers, one novice teacher and one mature teacher, from the English teaching and research group of X higher vocational college. The questions in the teacher interviews mainly included:

Problems encountered in teaching English and learning

English;

What kind of English learning strategies are taught to students; and

How to develop students' awareness of language strategy learning and utilization.

## 4. Data Analysis and Discussion of Results

In this chapter, the questionnaire data will be analyzed using SPSS 24.0 software, followed by interviews with the selected research participants, and the data will be discussed in conjunction with the results of the interviews with the aim of answering the research questions of the study. The content of this chapter focuses on the use of LLSs among college students in higher vocational colleges, the correlation between LLSs and English performance and the discussion of the research findings. A detailed account will be developed below.

### 4.1. Current Status of Language Learning Strategy Use

#### 4.1.1. General Situation Analysis

Since there are too many raw variables, which is not conducive to discovering the relationship between the variables, in order to facilitate the analysis, the author conducted descriptive statistics on the questionnaire in terms of the three factors of the questionnaire, including metacognitive strategies, cognitive strategies and social/emotional strategies. The results of the descriptive statistics are shown in

**Table 2**, which shows that the overall average score of the questionnaire is 3.13, which is unsatisfactory in terms of the theoretical criteria of English learning strategies in X higher vocational colleges and universities in general. The highest score among the factors is the metacognitive strategy factor at 3.65. The second highest score was cognitive strategies at 3.12. The lowest score was social/emotional strategies with 2.63. Meanwhile, there were significant differences between metacognitive strategies and cognitive strategies, and

cognitive strategies and social/emotional strategies, with the smallest standard deviation of 0.72 for cognitive strategies. Social/emotional strategies had the largest standard deviation of 0.85, which indicates that students were more consistent in their use of cognitive strategies, and more varied in their social/emotional strategies. These situations illustrate that students have relatively the best mastery of metacognitive strategies, followed by cognitive strategies, while social/emotional strategies are the worst.

**Table 2.** Descriptive statistic.

Dimension	N	Minimum	Maximum	Mean	SD
Metacognitive strategy	226	1.51	5.00	3.65	0.81
Cognitive strategy	226	1.47	4.48	3.12	0.72
Social/emotional strategies	226	1.05	4.85	2.63	0.85
Total schedule	226	1.00	5.00	3.13	0.77
Valid N (list state)	226				

This paper suggests that this may be due to the fact that although students have a preliminary sense of learning plan, they lack specific guidance on learning strategies. And due to the subjective and objective conditions, they cannot make good use of English learning resources. The second language acquisition model states that the learner’s monitoring of language learning must fulfill three conditions:

One is that learners must have enough time.

Second, the learner must focus on the language form.

Thirdly, the learner must know the appropriate grammatical rules.

The implication of these assertions for English teachers is that learners should be given enough time to develop language strategies and that they should be taught the necessary learning strategies, which are particularly worthy of attention by English teachers in view of the fact that the students’ cognitive strategy scores reflected in this survey are only 3.12.

#### 4.1.2. Dimensional Analysis

In order to further identify the problems, this paper examined the scores of each factor in detail.

(1) Scores on metacognitive strategies

**Table 3** shows that among the metacognitive strategies, the score of “self-regulation strategy” is the highest, reaching 4.31. The lowest was “planning strategy”, which was only 3.32, and the difference between the two reached

0.99. However, there was no big difference between the “self-monitoring strategy” and the “selective attention strategy”, which were 3.67 and 3.44, respectively. At the same time, the standard deviation of the “selective attention strategy” was the largest, which was 1.31. The standard deviation of the “self-regulation strategy” was the smallest, which was 0.87, which was quite different, indicating that there was a large difference in the internal fluctuations of the two. These situations show that students communicate frequently with teachers and classmates, but they do not have a clear learning plan and action, and they need to be guided and supervised in this regard.

(2) Cognitive strategy factor scores

**Table 4** shows that the overall score of cognitive strategy is not high, with the highest score of 3.58 for “guessing strategy” and 3.31 for “note-taking learning strategy”. However, the mean values of “mechanical memory strategy (2.71)”, “classification strategy (2.84)”, “context strategy (2.92)”, “dictionary search strategy (2.84)”, “translation/native language strategy (2.77)” and “word formation strategy (2.92)” with low scores did not reach 3.00, and the standard deviation of each question was not significantly different. This situation shows that students generally lack the habit of using specific learning strategies in English learning, and learning is in a spontaneous and primitive state, and teachers need to consciously guide and train cognitive strategies in this regard.

**Table 3.** Metacognitive strategy factors describe statistical results.

Secondary Index	N	Minimum	Maximum	Mean	SD
Develop a planning strategy	226	1.00	5.00	3.32	1.11
Self-regulation strategy	226	2.00	5.00	4.31	0.87
Self-monitoring strategy	226	1.00	5.00	3.67	1.06
Selective attention strategy	226	1.00	5.00	3.44	1.31
Valid N (list state)	226				

**Table 4.** Cognitive strategy factor descriptive statistics.

Secondary Index	N	Minimum	Maximum	Mean	SD
Rote memory strategy	226	1.00	5.00	2.71	1.06
Classification strategy	226	1.00	5.00	2.84	1.19
Context strategy	226	1.00	5.00	2.92	1.01
Look up STH in the dictionary	226	1.00	5.00	2.84	0.95
Guessing strategy	226	1.00	5.00	3.58	0.97
Do exercise strategies	226	1.00	5.00	3.21	1.14
Association and association strategies	226	1.00	5.00	3.29	1.05
Note-taking learning strategy	226	1.00	5.00	3.31	1.07
Translation/Native language strategy	226	1.00	5.00	2.77	0.96
Word formation strategies	226	1.00	5.00	2.92	1.23
Valid N (list state)	226				

(3) Social/emotional strategies

Finally, the descriptive statistics of social/emotional strategies are shown in **Table 5**. On the resource strategies, the scores in descending order were “self-motivation strategy (2.71)”, “cooperative learning strategy (2.67)”, and “help-seeking strategy (2.23)”, with small differences in standard deviations across questions. This reflects the changes in En-

glish learning tools and resources for today’s students, as the Internet has begun to replace traditional English dictionaries, books and newspapers as the main means to assist students’ learning. However, it is also important to see that the overall level of students’ utilization of English social/emotional strategies is low, with a mean value of only about 2.54, which is not even up to a passing level.

**Table 5.** Descriptive statistical results of social/emotional strategies.

Secondary Index	N	Minimum	Maximum	Mean	SD
Cooperative learning strategies	226	1.00	5.00	2.67	1.01
Self-motivation strategy	226	2.00	5.00	2.71	1.19
Help-seeking strategy	226	1.00	5.00	2.23	1.05
Valid N (list state)	226				

In conclusion, it can be concluded that the use of LLSs is poor in X higher education institutions.

**4.2. Correlation Analysis between Language Learning Strategies and English Achievement**

This section focuses on the results of the second research question, “What is the relationship between LLSs and English achievement?” The correlation between the two was explored through correlation analysis, and regression

analysis was used to explore it in detail.

**4.2.1. Correlation Analysis between Language Learning Strategies and English Achievement**

The results of the correlation analysis between LLSs and English grades in X higher vocational colleges and universities are shown in **Table 6**, the four sub-dimensions of LLSs, namely metacognitive strategies (S1), cognitive strategies (S2), communicative strategies (S3) and affective strategies (S4), and the language learning strategies (SL), are all signif-



icantly and positively correlated with English grades (EFL grades). Among them, metacognitive strategies had the highest correlation with English achievement, with a Pearson’s correlation coefficient of 0.812, implying that metacognitive strategies were highly positively correlated with English achievement. The correlation coefficient between cognitive strategies and English achievement is 0.749, indicating a

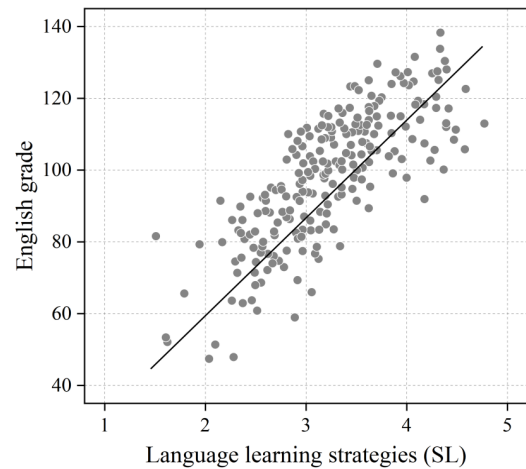
medium-high significant correlation. Communicative strategies have the lowest correlation with English achievement with a correlation coefficient of 0.301, implying that communicative strategies have a low significant correlation with students’ English achievement. The correlation coefficient between affective strategies and English achievement is 0.582, which means that they are moderately correlated.

**Table 6.** The correlation between language learning strategies and English achievement.

Dimension		S1	S2	S3	S4	SL	EFL Grade
S1	Pearson correlation	1					
	Sig. (double tail)	-					
	N	226					
S2	Pearson correlation	0.887**	1				
	Sig. (double tail)	0.000	-				
	N	226	226				
S3	Pearson correlation	0.451**	0.492**	1			
	Sig. (double tail)	0.000	0.000	-			
	N	226	226	226			
S4	Pearson correlation	0.756**	0.742**	0.484**	1		
	Sig. (double tail)	0.000	0.000	0.000	-		
	N	226	226	226	226		
SL	Pearson correlation	0.914**	0.866**	0.533**	0.837**	1	
	Sig. (double tail)	0.000	0.000	0.000	0.000	-	
	N	226	226	226	226	226	
EFL grade	Pearson correlation	0.812**	0.749**	0.301**	0.582**	0.778**	1
	Sig. (double tail)	0.000	0.000	0.000	0.000	0.000	-
	N	226	226	226	226	226	226

\*\* At level 0.01 (two-tailed), the correlation was significant.

The scatter distribution of the correlation between language learning strategies and English achievement is shown in **Figure 2**. As a whole, observing the scatter plot of the correlation between language learning strategies and English achievement, it can be seen that the relationship between language learning strategies and English achievement is roughly positive. In addition, the Pearson correlation test found that the significance value of language learning strategies and English achievement of X higher vocational students is 0.00, which is less than 0.05, which indicates that there is a significant correlation between language learning strategies and English achievement, and the Pearson correlation index of the two is 0.778, which is within the range of 0.6–0.8 correlation coefficient. Therefore, language learning strategies have a medium-high positive correlation with English achievement. To a certain extent, this can indicate that the more frequently students use language learning strategies, the better their performance will be.



**Figure 2.** Scatter plot of correlation between SL and EFL-grade.

#### 4.2.2. Regression Analysis of Language Learning Strategies and English Achievement

The relationship between language learning strategies and English achievement, i.e., positive correlation, was

learned through Pearson correlation analysis. In order to understand more clearly how language learning strategies and their dimensions affect English achievement, linear regression analysis was used to investigate whether the frequency of using language learning strategies and their four dimensions can predict English achievement.

(1) Regression Analysis of Language Learning Strategies and English Achievement

Regression analysis was conducted with English achievement as the dependent variable and language learning strategies as the independent variable, and the results of its

model summary, ANOVA and regression coefficients were obtained as shown in **Tables 7–9**. Through data analysis, it was obtained that the fit coefficient R of the regression equation between language learning strategies and English achievement was 0.775, indicating that the sample regression straight line was a good fit to the sample observations. The adjusted R-square in the table indicates the use of language learning strategies which explains 60.5% of the English achievement. The significant p-value in the ANOVA is  $0.000 < 0.05$ , indicating that language learning strategies can significantly influence English achievement.

**Table 7.** Model summary <sup>b</sup> for SL and EFL grade.

Model	R	R Square	Adjusted R Square	Error in Standard Estimates
1	0.775 <sup>a</sup>	0.607	0.605	11.148

a. Predictive variables: (constant), language learning strategies. b. Dependent variable: EFL grade.

**Table 8.** Analysis of variance between SL and EFL.

Model		Sum of Squares	Freedom	Mean Square	F	Significance
1	Regression	44075.275	1	44581.275	351.227	0.000 <sup>b</sup>
	Residual error	30029.177	225	131.408		
	Total	74104.45	226			

a. Dependent variable: EFL grade. b. Predictive variables: (constant), language learning strategies.

**Table 9.** Regression coefficient <sup>a</sup> between SL and EFL.

Model		Unnormalized Coefficient B	Standard Error	Normalization Factor Beta	t	Sig.	Collinearity Statistics Tolerance	VIF
1	(Constant)	27.331	3.186		7.504	0.000		
	SL	20.045	1.125	0.778	18.836	0.000	1.000	1.000

a. Dependent variable: EFL grade.

From the regression and residual sum of squares, the variance of English achievement that can be explained by the use of language learning strategies is relatively large, indicating that most of the variance of English achievement can be explained by language learning strategies. In the table of regression coefficients, the significance value of  $0.000 < 0.05$  indicates that the hypothesis that there is a linear correlation between language learning strategies and English achievement can be accepted. The linear equation is, English Achievement =  $27.331 + 20.045 * \text{Language Learning Strategies Usage}$ .

(2) Regression Analysis of the Four Dimensions of Language Learning Strategies and English Achievement

Based on the purpose of this study, it is necessary to analyze how the four dimensions of language learning strategies, namely, metacognitive strategies, cognitive strategies, communicative strategies and affective strategies, affect English achievement, and choose linear regression analysis with English achievement as the dependent variable and the four dimensions of language learning strategies as the independent variables. The model summary and ANOVA results of the four dimensions of language learning strategies and English achievement are shown in **Tables 10 and 11**. The fit of this linear regression model is good, and the adjusted R-square =  $0.674 > 0.6$ , which means that the results of this operation can truly and reliably reflect the influence of the

four dimensions of language learning strategies on English achievement, which means that the four variables of metacognitive, cognitive, communicative and affective strategies in the language learning strategies are able to reflect the degree of change in English achievement by 67.4%. By looking at

the results of ANOVA, the regression equation was found to be significant with significance P equal to  $0.000 < 0.05$ , which means that at least one of the four dimensions of language learning strategies can significantly affect English achievement.

**Table 10.** SL four dimensions and EFL grade model Abstract <sup>b</sup>.

Model	R	R Square	Adjusted R Square	Error in Standard Estimates
2	0.814 <sup>a</sup>	0.679	0.674	10.120

a. Predictive variables: (constant), S1, S2, S3, S4. b. Dependent variable: EFL grade.

**Table 11.** Analysis of variance between SL four dimensions and EFL grade.

Model		Sum of Squares	Freedom	Mean Square	F	Significance
2	Regression	48752.824	5	12448.324	127.304	0.000 <sup>b</sup>
	Residual error	23144.518	221	108.151		
	Total	71897.34	226			

a. Dependent variable: EFL grade. b. Predictive variables: (constant), S1, S2, S3, S4.

The coefficients of the four dimensions of language learning strategies and English achievement are shown in **Table 12**, which shows what kind of strategies can significantly affect English achievement. Metacognitive strategies (S1), can significantly and positively affect English achievement ( $B = 15.334 > 0, p = 0.000 < 0.05$ ). Cognitive strategies (S2), can significantly and positively influence English achievement

( $B = 8.283 > 0, p = 0.000 < 0.05$ ). Communicative strategies (S3) were able to positively influence English achievement ( $B = 3.261 < 0, p = 0.043 < 0.05$ ). Emotional strategies were able to positively influence English achievement ( $B = 3.030 < 0, p = 0.031 < 0.05$ ). Therefore, the regression equation was derived between the variables,  $EFL\ grade = 49.056 + 15.334 * S1 + 8.283 * S2 + 3.261 * S3 + 3.030 * S4$ .

**Table 12.** The coefficient<sup>a</sup> of between SL four dimensions and EFL grade.

Model		Unnormalized Coefficient		Normalization Factor Beta	t	Sig.	Collinearity Statistics	
		B	Standard Error				Tolerance	VIF
1	(Constant)	49.056	5.157		8.667	0.000		
	S1	15.334	1.883	0.651	8.138	0.000	0.237	4.725
	S2	8.283	2.182	0.334	3.792	0.000	0.188	5.051
	S3	3.261	1.664	0.086	1.991	0.043	0.734	1.338
	S4	3.030	1.437	1.131	2.058	0.031	0.344	3.094

a. Dependent variable: EFL grade.

Through the above analysis, we find that there is a significant positive correlation between the language learning strategies of students in higher vocational colleges and their English achievement. First, in the correlation analysis, it is found that the application of English learning strategies can effectively improve students' English achievement, indicating that the application of English learning strategies can effectively improve the English achievement of students in higher vocational colleges and universities. Second, the regression

analysis shows that language learning strategies can significantly and positively predict their English achievement. This is consistent with previous studies, and the results are consistent.

### 4.3. Discussion

#### 4.3.1. The Tendency to Use English Learning Strategies

From our research results, the mean value of English learning strategies in high group is higher than that in mid-

dle group and low group. It shows that students in high group use learning strategies more frequently than those in low group. This result is consistent with previous studies by many scholars, that is, successful language learners use learning strategies more frequently than less successful language learners.

#### **4.3.2. Differences in the Use of Overall Learning Strategies**

Through one-way ANOVA analysis of the learning strategy data, it can be found that there are obvious differences in the mean value of learning strategies. In other words, different learners adopt the same learning strategies. In this study, multiple means comparison of learning strategies was conducted among learners in different score groups, and the data showed that there were significant differences between high and low score groups, and between middle and low score groups. However, there is no significant difference between the high group and the middle group. It can be seen that in terms of the use of learning strategies, students in low group and high group have the biggest difference, and students in low group and middle group also have obvious differences in the use of English learning strategies.

#### **4.3.3. Correlation Analysis between Different English Learning Strategies and English Achievement**

The correlation coefficient between language learning strategies and English achievement is 0.778 (Sig. = 0.000 < 0.01), indicating that learners' overall learning strategies are closely related to English achievement, that is, the higher the score of students, the more frequently they use language learning strategies. At the same time, it can be seen that metacognitive strategies have the greatest impact on performance, followed by affective strategies, memory strategies, compensation strategies and cognitive strategies. However, among all learning strategies, social strategies have relatively little effect on grades.

## **5. Conclusions**

In this paper, an adapted Language Learning Strategies Scale and an interview outline were used as research tools to explore the use of language learning strategies and the correlation between language learning strategies and English

language achievement. In response to the two research questions posed in this study, the data analysis and interviews conducted by SPSS 24.0 software revealed that:

(1) The overall frequency of language learning strategies used by X higher vocational students was at a moderate level (Mean = 3.13), with metacognitive strategies being used most frequently (Mean = 3.65), and social and emotional strategies being used least frequently (Mean = 2.63).

(2) The significance value of language learning strategies and English achievement of X higher vocational students is  $0.00 < 0.05$ , which indicates that there is a significant correlation between language learning strategies and English achievement, and the Pearson's correlation index of the two is 0.778, which is a medium-high positive correlation. It can be shown that the more frequently students use language learning strategies, the better their performance will be.

Based on the results of the study, a few teaching tips are proposed for teachers engaged in English teaching, in order to help these teachers to better and more targeted English teaching and guidance on the use of students' English learning strategies, and ultimately to help college students to learn English more easily, cultivate their interest in English learning, and improve their English grades. The specific suggestions are as follows:

First, teachers should adopt various teaching methods to enhance students' interest and autonomy in learning.

Secondly, teachers should teach students the knowledge of strategies and train them to use reasonable strategies to assist comprehension and memorization in English learning.

Third, teachers should combine English teaching with specialized courses and with contextual teaching.

Fourth, classroom teaching tasks should be set up reasonably to promote the development of students' learning strategies.

Fifth, optimize the classroom environment, play the role of students in the classroom, and develop students' learning strategies through teaching tasks.

## **Author Contributions**

Conceptualization, H.L.; methodology, H.L.; software, H.L.; validation, H.L.; formal analysis, H.L.; investigation, H.L.; resources, H.L.; data curation, H.L.; writing—original draft preparation, H.L.; writing—review and editing, H.L.;

supervision, A.R.B.H. and Y.N.T.; funding acquisition, H.L.

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Not applicable.

## Informed Consent Statement

Informed consent was obtained from all subjects involved in the study.

Written informed consent has been obtained from the patient(s) to publish this paper.

## Data Availability Statement

Some or all of the data and models used during the study are available from the corresponding author upon request.

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## Conflicts of Interest

The authors declare no conflict of interest.

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