

Research of the Effect of Proficiency in the Use of Metacognitive Strategies on College Students' English Writing Achievement

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Abstract: This study takes 108 college students majoring in English in a university as the research object, and adopts questionnaire survey method and statistical analysis method to study the relationship between metacognitive strategies and English performance. Oxford (1992) classifies metacognitive strategies into attentional, planning and evaluative strategies, so this paper will analyze the influence on English performance from these three dimensions, and draws the conclusions that:(1) the metacognitive strategy use proficiency is at a high level, where the three dimensions are between high and medium levels; (2) metacognitive strategies have a positive correlation effect on English writing performance.

Keywords: Metacognitive Strategies; English Writing.

1. Introduction

As we all know, English writing is a concrete embodiment of college students' comprehensive English language use ability, undergraduate and postgraduate levels as well as TOEFL, IELTS and other kinds of exams will be writing as an important part and aspect of the examination of students' English language ability, teachers attach great importance to English writing in the teaching process. [12] Then for language learners, among the four basic skills of listening, speaking, reading and writing in second language learning, especially in English as a second language or foreign language learning, writing occupies a very important position, and it can best reflect the language use ability of English learners. Writing is a creative skill, which not only requires students to master comprehensive knowledge of language and vocabulary, but also requires students to have certain analytical ability, guides students to long-term observation of things around them, and accumulates rich materials, which is a complex and long process. [13]

Skehan (1998) has stated that "language learning strategies are an aspect of second language acquisition research whose importance has become increasingly prominent over the past two decades." This is because learning strategies play an important role in language learning, and effective learning strategies can increase the efficiency of language learning, improve the quality of learning, and develop learners' independent learning ability. [14] As one of the important components of learning strategies, more and more researchers recognize the importance of metacognitive strategies in the process of English writing. They believe that the application of metacognitive strategies plays an important role in improving students' English writing performance. Metacognitive learning strategies can help learners to interpret learning tasks, specify appropriate strategies for completing tasks, monitor the progress of task completion and evaluate the degree of task completion, as well as help learners to think and reflect on themselves, assess what is known, evaluate the learning process, and measure and set new learning goals. [8]

In the existing studies, a number of scholars have confirmed the correlation between motivation, learning commitment, learning strategies and independent learning ability, but the relationship and influence mechanism of the dimensional strategies and English writing performance under the metacognitive strategy are yet to be explored in depth. Although many scholars have paid high attention to the research on metacognition and learning strategies in the domestic and international scope, the research on the application of metacognitive strategies in English writing is still in its infancy. Therefore, this study aims to further explore the influence of metacognitive strategies on the English writing of English majors and to give some suggestions for improvement.

2. Literature Review

Many foreign studies have proved the importance of metacognitive strategies in improving the efficiency of foreign language learners. For example, O'Mally and Chamot (1990) found that whether learners' learning is successful or not depends largely on the success or failure of the use of metacognitive strategies. [3] In order to study the effect of metacognitive strategies on high school students' writing, scholars Hopman & Glynn (1989) also have research experiments and the results of the experiments show that metacognitive strategy learning has a positive effect on students' writing, which is mainly reflected in the increase of the length of students' compositions and the quality of writing. [6]

And in China, there are also related scholars to study metacognition and English writing. Dong Xiaoyu and Zhanju (2009) conducted a survey study on 56 non-English college students, 32 in the experimental group and 24 in the control group, and concluded that metacognitive strategies have a positive effect on cultivating students' metacognitive ability and help students establish a positive attitude toward writing and deepen their understanding of the nature of writing. Lu Wenjun (2014) took 188 English college students as the survey object and analyzed them through questionnaires and writing test papers, and concluded that metacognitive training

has a positive effect on students' improving the level of using metacognitive strategies, but the effect of training at different stages and the degree of influence on high, middle and low subgroups are different, and finally showed that metacognitive strategies have an improving effect on English writing scores. In addition to this, there are many related studies confirming the effectiveness of metacognitive strategies.

With the continuous development of metacognitive strategies, many linguists recognize the impact of metacognitive strategies as learning strategies and apply them to language learning. Specifically when it comes to English writing tasks, the definition and classification of English writing metacognitive strategies are mainly reflected as follows: Lu Wenjun (2006) refers to O'Malley and Chamot's (2001) classification of metacognitive strategies, and divides writing metacognitive strategies into four strategies: pre-planning, selective attention, monitoring, and evaluation, and each of them contains pre-writing preparation, checking during writing, requesting and post-writing evaluation components.[4] To summarize, the author defines English writing metacognitive strategies as the strategies that learners plan their writing before the beginning of English writing, check and correct the writing task in time, and evaluate the writing outcomes.

3. Research Hypotheses

3.1. Planning Strategies and English Writing

Learners make a suitable study plan based on their existing cognitive knowledge, such as determining learning objectives, predicting key points and difficulties, generating questions to be answered, analyzing how to complete the task, and arranging study time. [9] Producing a pre-writing plan is a prerequisite for writing good English writing, which includes setting a title, making an outline, writing a draft and so on. Determining a title that fits the scene and semantics can effectively avoid off-topic situations, while making an outline is helpful in establishing a proper framework for the essay, making it look more logical and better organizing the language appropriately. In addition to these temporary preparations, the pre-writing program also includes the accumulation of relevant materials before writing, which is for the writers to enhance the intrinsic writing literacy, which can better enrich the content of the article and sublimate the writing theme.

Based on the above analysis, this paper puts forward the following hypothesis 1: the planning strategy has a positive influence on college students' English writing performance.

3.2. Monitoring Strategy and English Writing

Monitoring strategy means that learners monitor their own learning at any time, such as memory monitoring, reading monitoring, strategy application monitoring and so on, in order to ensure that the learning task is completed according to the quality and quantity. [9] Monitoring strategies in writing are manifested in the writer's ability to consciously plan, correct and monitor the development of the whole writing process, and to make corrections for errors. [10] In the process of English writing, Chinese college students, as non-native speakers of English, inevitably make grammatical errors, so we need to check and revise the first draft of writing in time after it is completed. Moreover, in the process of English writing, there may be misspellings and "Chinglish"

caused by unfamiliarity with words or not knowing how to express a sentence, so writers need to constantly check whether the spelling is correct and whether there are problems with expression. Monitoring includes self-monitoring, peer-monitoring, teacher-monitoring, etc. If they cannot find the errors in their writing, they can ask their classmates and teachers to correct their writing.

Based on the above analysis, this paper puts forward the following hypothesis 2: monitoring strategy has a positive influence on college students' English writing performance.

3.3. Evaluation Strategies and English Writing

The evaluation of English writing by evaluation strategies is an essential process in the writing process. Through self-evaluation, students are able to improve their self-reflective consciousness and objectively evaluate their own learning process and learning behaviors, so as to find out the existing problems and improve them. [9] The evaluation process includes self-evaluation, peer evaluation and teacher evaluation. College students' own evaluation of writing can be done by way of preliminary evaluation of the essay to find out what they feel is good or bad, so as to establish a clearer perception and stimulate students' confidence and interest. Peer evaluation allows students to find each other's mistakes or learn from each other's advanced expressions, so that students can understand each other's level of English writing. Teacher evaluation can analyze English writing in terms of article structure, English expression and spelling vocabulary, clearly point out students' mistakes and judge students' writing level, which includes scoring and commenting.

Based on the above analysis, this paper puts forward the following hypothesis 3: evaluation strategies have a positive impact on college students' English writing performance.

4. Methodology

4.1. Research Subjects

Several studies have shown the close relationship between metacognitive strategies and English writing, but it is still debatable whether college students have improved their English writing performance after using metacognitive learning strategies. This study takes the English students of a heavy school in Guangzhou City as the research object, and 108 English students who have taken the IV or VIII exams are randomly selected as the survey object, and the writing scores in the IV or VIII are used as the performance reference.

4.2. Survey Instruments

4.2.1. Questionnaire Survey Method

Questionnaire survey method is a popular social survey method at home and abroad. Questionnaires are presented in the form of questions and set several expected questions for students to choose, and thus obtain reliable data. Based on O'Malley & Chamot's (1990) classification of metacognitive strategies as a theoretical basis, and with reference to the metacognitive strategies questionnaire borrowed from Lu Wenjun (2006), the questionnaire was adapted according to the object of this study, and the questionnaire was designed from the three dimensions of planning strategies, monitoring strategies and evaluating strategies, with a total of 22 single-choice questions, with a total of 22 single-choice questions. It aims to obtain data on college students' use of metacognitive strategies in English writing and the effect of proficiency in the use of metacognitive strategies on students' English

performance.

The questionnaire consists of four parts: 5 questions on basic information about the participants and their writing performance; 7 questions on planning strategies to find out whether students construct writing plans and frameworks before writing; 5 questions on monitoring strategies to find out whether students check for off-topic and incorrect phrases when they are writing; and 5 questions on evaluating strategies to find out whether students evaluate and reflect on their writing after they have written. The objective questions in the latter three sections all use a 5-point scale format (1=never, 2=occasionally, 3=sometimes, 4=often, 5=always).

The author used SPSS to analyze the reliability of the data by dimension according to the Alpha reliability coefficient method, which is the most used method today. It is generally believed that the reliability coefficient of the scale should be between 0 and 1. If the reliability coefficient is greater than 0.9, it means that the scale has good reliability; if the reliability coefficient is 0.8-0.9, it means that the scale has good reliability; if the reliability coefficient is 0.7-0.8, it means that some data in the scale still need to be improved; if the reliability coefficient is less than 0.7, it means that some data must be discarded. The reliability coefficients (Cronbach's alpha) of the three dimensions of this questionnaire, planning, monitoring, and evaluation strategies, are 0.821, 0.857, and 0.885, respectively, which are all greater than 0.8, then it indicates that the questionnaire's setup and the recovered data have a high degree of reliability, as shown in Table 1.

As shown in Table 2, the KMO value of the questionnaire "English Metacognitive Strategies and English Writing Achievement of EFL Students" is 0.867>0.7, which indicates that this questionnaire has a high degree of validity.

Table 1. The Reliability of Questionnaire

Questionnaire	N of Items	Alpha
Planning	6, 7, 8, 9, 10, 11	0.821
Monitoring	12, 13, 14, 15, 16	0.857
Evaluation	17, 18, 19, 20, 21	0.885

Table 2. KMO and Bartlett's Test of Questionnaire

KMO	df	Sig
.867	120	.000

In conclusion, the reliability and validity of this questionnaire meets the required standards and this questionnaire can be used as a research tool in this study.

4.2.2. Statistical Analysis Method

SPSS statistical software was used to conduct reliability and validity tests before the study, and data analysis was also carried out using this software. After the questionnaires were collected, the study used SPSS software to conduct correlation analysis to derive the degree of association, the direction and the mechanism between metacognitive strategies and English writing performance.

5. Results and Discussion

5.1. General Picture of English Metacognitive Strategies and Writing Performance

5.1.1. The Situation of English Writing Metacognitive Strategies

The author used SPSS software to statistically analyze the data of 108 valid questionnaires on metacognitive strategies of English majors in a university, as shown in Table 3 below:

Table 3. Descriptive statistics of metacognitive strategies

	N	Minimum	Maximum	Mean	Std. Deviation
Planning	108	1.83	5.00	3.48	0.85
Monitoring	108	1.00	5.00	3.71	0.84
Evaluation	108	1.40	5.00	3.32	0.99
Metacognition	108	1.50	5.00	3.50	0.79

According to the Linkert 5-point scale for mean values, in this strategy study, the author indicated the frequency of use of each strategy according to the level of the mean, as follows: a mean value of 4.5-5.0 indicates that the strategy is "always used"; a mean value of 3.5-4.4 indicates that the strategy is "often used", and the first two are both high levels of strategy use; the mean value of 2.5-3.4 indicates that the strategy is "sometimes used" and the frequency of use is medium; and the mean value of 1.5-2.4 indicates that the strategy is "occasionally used" and the frequency of use is low. The details are shown in Table 4 below:

Table 4. Grading Scale for Metacognitive Strategy Use

Means	Frequency of use of the strategy	Grade
4.5-5.0	High	always used
3.5-4.4		often used
2.5-3.4	Medium	sometimes used
1.5-2.4	low	occasionally used

As shown in Table 1 and Table 2, the frequency of metacognitive strategies used by students is: monitoring strategy (3.71), planning strategy (3.48), and evaluating strategy (3.32) in descending order. The mean value of monitoring strategy is within the range of 3.5-4.4, which indicates that EFL students often use monitoring strategy and it is at a high level; the mean value of planning strategy and evaluating strategy is within the range of 2.5-3.4, which indicates that EFL students sometimes use planning strategy and evaluating strategy and they are both at a medium level. This shows that EFL students pay more attention to monitoring their own behavior while writing, compared with less pre-writing planning and post-writing evaluation.

5.1.2. The Situation of English Writing Performance

The author used SPSS software to statistically analyze the data of 108 valid questionnaires on metacognitive strategies of English majors in a university, as shown in Table 5 below:

Table 5. Descriptive statistics of English writing scores

	N	Minimum	Maximum	Mean	Std. Deviation
English Writing Scores	108	5	18	12.93	2.90
Number of valid cases	108				

As can be seen from the above table, the average score of college students' writing performance in the questionnaire is 12.93 (Out of 20 points), reflecting that most of the students' writing level is in the middle to upper level. The minimum value of the writing score is 5 points and the maximum value is 18 points, reflecting the large individual differences in students' writing ability.

5.2. Correlation Analysis of English Metacognitive Strategies and Writing Scores

Through the correlation analysis of English metacognitive strategies*English writing achievement, it can be concluded

that the correlation coefficient $r=0.483$ ($p=0.000<0.01$) indicates that the two variables are correlated with each other, and the degree of correlation is significant moderate correlation. All of the sub-dimensions of metacognitive strategies are correlated with English writing achievement, which unfolds as follows: planning strategy ($r=0.482$, $p=0.000<0.05$), monitoring strategy ($r=0.362$, $p=0.000<0.05$), and evaluation strategy ($r=0.424$, $p=0.000<0.05$). It indicates that planning and evaluation strategies are closely related to English writing achievement with a moderate correlation trend, while monitoring strategies have a weak correlation with English writing achievement. The details are shown in Table 6 below:

Table 6. Correlation between English metacognitive strategies and their dimensions and writing scores

		Planning	Monitoring	Evaluation	Metacognition
English writing scores	Pearson	.482**	.362**	.424**	.483**
	Sig.	0.000	0.000	0.000	0.000
	N	108	108	108	108

** . Correlation is significant at the 0.01 level (2-tailed).

5.3. Regression Analysis of English Metacognitive Strategies and Writing Scores

According to the following model summarized in Table 7, the correlation coefficient R value of the model is 0.497, which indicates that there is a correlation between English

metacognitive strategies and English writing achievement, and the linear relationship is obvious. p-value is $0.000<0.05$, which indicates that the regression model is significant. The coefficient of determination R-square is 0.247, which reflects to some extent that 24.7% of the variance in English writing achievement can be explained by English metacognitive strategies.

Table 7. Modeling Summary of English Metacognitive Strategies and English Writing Achievement

Model	R	R2	Adjusted R Square	Errors in Std. estimates	Changing statistics					Durbin-Watson(U)
					R2	F	df1	df2	Sig.	
1	.497a	0.247	0.226	2.554	0.247	11.393	3	104	0	2.054

a. Predictor variables: (constant), evaluation, monitoring, planning
b. Dependent Variable: achievement in English writing

According to Table 8 below, English metacognitive strategies correspond to $t=5.679>2$, $p=0.000<0.05$, which indicates that the effect of English metacognitive strategies on English writing achievement is positive and significant. The estimated model for this regression analysis can be obtained from the following data as: English writing achievement= $6.697+0.111x$ English writing metacognitive

strategies. This regression equation can be interpreted as: For every unit increase in English metacognitive strategy, English writing achievement will rise by 0.111 points, which shows that there is a significant positive correlation between college students' English metacognitive strategy and English writing achievement.

Table 8. Regression coefficients of English metacognitive strategies and English writing achievement

Model		Unstandardized Coefficients	Std. Error	Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	6.697	1.124		5.958	0.000
	Metacognitive strategies	0.111	0.02	0.483	5.679	0.000

a Dependent variable: English writing scores

According to Table 9 below, it can be concluded that the standardized coefficients of the dimensions of planning, monitoring and evaluating strategies are 0.35, 0.041 and

0.151, respectively, indicating that all three dimensions have a positive influence on college students' English writing performance. Among them, the standardized coefficient of

planning strategy is 0.35, and the significance value is $0.006 < 0.05$, indicating that planning strategy can significantly affect English writing performance; the standardized coefficient of monitoring strategy and evaluation strategy is 0.041, 0.151, respectively. And the significance values are $0.736 > 0.05$ and $0.252 > 0.05$, indicating that the influence effect of monitoring and

evaluation strategy is not significant. Therefore, the planning strategy contributes the most to the regression equation. The Durbin-Watson statistic in the table is around 2, which indicates that the regression model is not autocorrelated, there is no correlation between the sample data, and the model passes the test.

Table 9. Summary of the regression model of English writing metacognitive strategies and its dimensions and English writing achievement

Model	Unstandardized Coefficients			Standardized Coefficients		t	Sig.	Durbin-Watson
		B	Std. Error	Beta				
1	(Constant)	6.796	1.191			5.708	0	2.054
	Planning	0.199	0.071	0.35		2.778	0.006	
	Monitoring	0.028	0.083	0.041		0.338	0.736	
	Evaluation	0.089	0.077	0.151		1.152	0.252	

a Dependent variable: English writing scores

6. Conclusion

Through this study, we can know that the 108 English majors who participated in the survey used metacognitive strategies for English writing at high and medium levels, with the monitoring strategy being used most frequently - at a high level, and the planning and evaluation strategy being used at a medium level, which suggests that English majors have a weak awareness of the pre-writing planning and the summarizing and assessing of the writing after writing. This indicates that EFL students' awareness of pre-writing planning and post-writing summarizing and assessing is weak in comparison. Meanwhile, the overall use of metacognitive strategy is still at a high level, which indicates that EFL students have a high awareness of using this strategy in writing.

Through the correlation and regression analysis, the English metacognitive strategy corresponds to $t=5.679 > 2$, $p=0.000 < 0.05$, which indicates that the English metacognitive strategy and its effect on English writing performance is positive and significant. Among them, planning strategy can significantly affect English writing achievement; monitoring strategy and evaluation strategy have less significant effects, so planning strategy contributes the most to the regression equation. Therefore, students can understand the important role of planning strategy and strengthen the training of pre-writing planning.

In conclusion, the results of this study verified the positive effect of metacognitive strategies on English writing achievement. Both the results of existing studies and the results of the present study indicate that students can achieve higher English writing scores if they can make better use of English metacognitive strategies in their writing. Not only can students consciously increase the frequency of using metacognitive strategies in their future writing, but teachers should also realize that the training of learning strategies can improve the effectiveness and quality of students' learning, such as letting students think about the structure of their writing and the available materials before writing, reminding them to check for errors during writing and commenting on the errors for them after writing. And in order to solve the problems of college students' inability to word words accurately, insufficient vocabulary and grammatical errors in writing, English teachers can also adjust their teaching plans and implement writing teaching in a targeted way according

to college students' use of metacognitive strategies.

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