



Classroom Practice of Improving Independent Learning Ability of College English Guided by Metacognitive Theory

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SUMMARY: *Cultivating students' English independent learning ability is one of the core contents in English teaching. The purpose of this study is to investigate the effect of teaching mode guided by metacognitive theory on college English independent learning ability. Taking classroom practice as an opportunity, two classes of a university with a total of 98 students were selected as research subjects, and data were collected and statistically analyzed through questionnaires. The metacognitive level of the experimental students was improved, and the use of metacognitive strategies rose by 64.14% compared with that before the experiment. There is a significant difference between the independent learning ability of students in the two classes after the experiment ($p < 0.01$), and the experimental students' English independent learning ability is 11.84% higher than that of the control students, and 11.87% higher than that before the experiment. From the perspective of correlation, it is concluded that there is a significant correlation between metacognitive strategies and independent learning ability. The results show that the teaching model based on metacognitive theory can improve the independent learning ability of college English.*

KEYWORDS: *statistical analysis; correlation analysis; classroom practice; metacognitive theory; independent learning ability*

1 Introduction

Motivation is one of the core concepts in educational psychology, and it refers to having a clear purpose for a certain learning activity and putting in corresponding efforts to achieve the purpose [1]. It has a direct impact on the learning effectiveness of foreign language learners, and good motivation can motivate learners to continue exploring, practicing, and mastering new language skills. However, in view of the length and complexity of language learning, most of the time, learners will suffer from motivational decline in the learning process [2, 3]. Such a situation may be triggered by a variety of factors, such as unclear learning goals, inappropriate learning content, and so on. In order to cope with motivation decline, learners need to adopt a series of motivation control strategies to maintain their positive learning attitudes and strong enthusiasm for learning, in the hope of improving the final English learning outcomes [4].

Self-directed learning ability is also one of the important factors affecting the effectiveness of English learning. Since the 1990s, many scholars and teachers have reached a consensus that school education is ultimately aimed at developing students' lifelong learning ability [5]. That is to say, school education should not only let learners learn knowledge, but more importantly, let them learn how to learn. The relationship between self-directed learning and lifelong

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learning is complementary, self-directed learning lays the foundation for realizing the goal of lifelong learning, and lifelong learning provides a broad practical scene for learners' self-directed learning, and in today's ever-changing social development, the development of self-directed learning ability can help learners continuously adapt to new environments and improve themselves [6-8]. Learners' autonomy of learning can be maximized under favorable conditions. However, under the influence of the traditional teaching mode, the development of learners' independent learning ability is inhibited to some extent [9].

Factors affecting learners' independent learning ability are mainly categorized into internal conditions and external conditions, of which, internal conditions mainly refer to the learners' own factors. Learners' independent learning ability is not constant and is easily affected by many factors, in view of this, scholars have begun to study the internal factors affecting independent learning ability. Pan, R et al. argue that the factors influencing students' self-directed learning cover different levels of indicators, which include students' self-directed learning methods, self-monitoring processes, and evaluation methods. All of these elements can influence the efficiency of students' self-learning and promote their autonomy in learning [10]. Orakci, S and Gelisli, Y by examining the research data from the content analysis method and experimental method, concluded that students who chose independent learning through learning activities to facilitate, strengthen and practice the application of the dimensions of the starting from the experiments in the implementation of activity-based learning in order to improve the oral skills of the students concluded that activity-based learning significantly improves the performance of the students' spoken language [11]. Chen, T found through research that the core literacy aspects of students are mainly summarized as three levels of professional competence, social competence, and independent learning ability, in which on the level of independent learning ability, the main emphasis is on the human subjective initiative and sense of responsibility, to have a high degree of self-control, and to realize the aspects of self-evaluation and regulation [12]. Liu, W discusses the European Union's framework for lifelong learning from both a social as well as an economic perspective, pointing out the importance of self-directed learning, i.e. learners need to be focused on the learning dimension, be able to set their own goals and reflect on them, and take the time to maintain their learning and increase their autonomy [13]. He, Z and Wu, Y proposed the index system of core literacy in the 21st century, pointing out that it is necessary to monitor the independent learning program in a timely manner, to be able to complete the task independently, to make timely adjustments at different times and stages, and to complete the process of self-monitoring [14].

In addition, other scholars have pointed out that metacognitive strategies can also have an important impact on learners' independent learning, Panadero, E emphasized the importance of independent learning ability in language learning and proposed a method to enhance students' independent learning ability through strategy training and metacognitive guidance [15]. Bajrami, L argues that self-directed learning is also the antithesis of traditional education that enables students to be the masters of the classroom and it is also a rethinking and redistribution of knowledge as well as the right to participate in roles [16]. At the level of practical research on the application of the learning activity view, Haq, Z et al. in order to verify whether there is an effect of learning activities on the development of students' reading skills, concluded through experiments that teaching based on learning activities plays an important role in improving students' reading achievement and skills [17]. Yuliani, Y and Lengkanawati, N found that although project-based learning can be a catalyst for student autonomy in the planning phase, the implementation phase, and the monitoring phase, however, there are still a portion of students who do not adequately present themselves as autonomous [18]. Compared with internal conditions, research on external conditions that affect autonomous learning ability is relatively abundant. Ding, Y and Shen, H proposed that the development of science and

technology also affects learners' autonomous learning ability. The innovation of educational means has promoted the development of students' autonomous learning ability, and learners have gradually transformed from "passive autonomy" to "active autonomy" [19]. A study by Pingxiao, W showed that utilizing smart classrooms and multimedia platforms can provide students with a more interactive and immersive learning experience, which greatly facilitates the development of students' independent learning skills [20]. Chen, S et al. argued that the external educational environment as well as teachers' attitudes largely influence the development of students' independent learning ability, and that smart classrooms are crucial for realizing the transformation of education from knowledge-based talents to smart talents [21].

As the research on independent learning ability and enhancement strategies continues to advance, more and more researchers have begun to focus on the study of English independent learning ability enhancement strategies. Through in-depth analysis of learners' intrinsic motivation and extrinsic environmental factors, researchers have gradually realized that the interaction between these two factors plays a key role in learning effectiveness and learners' overall development [22, 23]. Wang G and Han L found that there are deficiencies in college students' self-directed learning ability and proposed optimization strategies such as interaction, continuous thinking, cultural introduction, and a good online environment to help students overcome the barriers to self-directed learning, enhance motivation, and improve learning effectiveness [24]. A study conducted by Kato, F et al. used a quasi-experimental design to validate the effectiveness of project-based learning in distance language learning using both quantitative and qualitative research methods, and the results of the study suggest that students can use self-directed learning strategies such as self-monitoring and self-assessment more effectively when participating in a project in order to improve their learning outcomes [25]. Padmadewi, N et al. considered self-directed learning ability as a skill necessary for survival in the 21st century, for this reason, they proposed a strategy to enhance the self-directed learning ability of English education students based on an embedded mixed-method design [26]. Du, Y constructed a self-constructed flipped classroom teaching model, which intensively strengthened non-English majors' English independent learning ability and motivated students' learning from three dimensions: self-management learning ability, self-learning psychology and self-learning behavior [27]. Wang, X and Zhang, W constructed a blended learning model based on SPOC, which combines the advantages of online and offline teaching, and can stimulate foreign language learners' motivation and cultivate students' independent learning ability, so as to further construct and enhance the learning independent learning behavior [28].

As far as English language learners are concerned, the cultivation of independent learning ability requires not only certain strategies and channels, but also certain theoretical methods. This paper takes metacognitive theory as a guide to design a teaching model of metacognition in university English independent learning from three aspects: enriching metacognitive knowledge, mastering metacognitive strategies and strengthening metacognitive monitoring. Two classes with comparable levels of English learning in a university are taken as experimental subjects, and experimental and control classes are identified. Questionnaires were used as research tools, and the English Learning Strategies Diagnostic Questionnaire and the Autonomous Learning Ability Test Questionnaire were prepared, which were distributed and collected before and after the experiment. Students' use of learning strategies was analyzed, and independent samples t-test was used to compare the results of the independent learning ability test between the two classes in the pre- and post-tests, and then Pearson's correlation analysis was used to investigate the correlation between English learning strategies and independent learning ability.

2 Study design

2.1 Purpose of the study

This study intends to combine metacognitive guidance with college English teaching to strengthen students' self-discipline in English learning, focusing on the role of metacognitive-guided teaching model in improving students' independent learning ability. Thus, it will cultivate students' autonomy in English learning, reduce their dependence on teachers, and enable them to realize their psychological process when learning and manage themselves in the learning process.

2.2 Metacognitively Guided Instructional Models

Promoting students' understanding of metacognition, cultivating students' ability of self-knowledge and self-control, and helping students find a suitable learning style for themselves are the focus of English teaching reform in colleges and universities. This college English teaching model based on metacognitive theory is shown in Figure 1, which mainly includes three levels: enriching metacognitive knowledge, mastering metacognitive strategies and strengthening metacognitive monitoring.

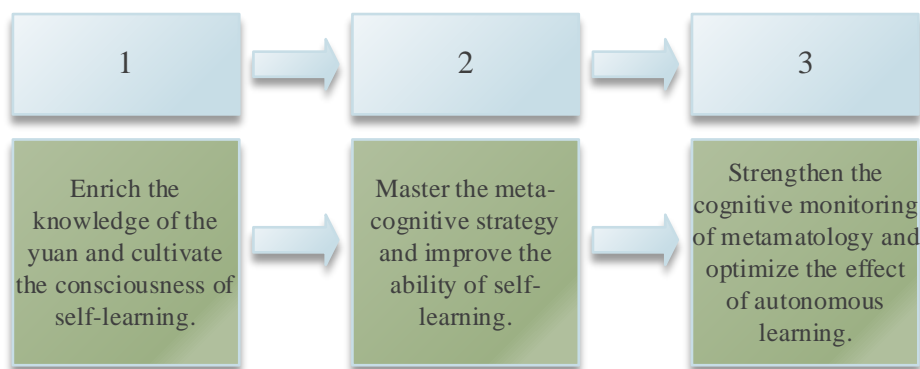


Figure 1: College English teaching model based on metacognitive theory

2.2.1 Enriching metacognitive knowledge

First of all, it is necessary for students to know themselves and the objects of their knowledge. That is, students should recognize their own English level and understand their strengths and weaknesses in the process of learning English. This knowledge of themselves can be summarized in the form of exams and tests with the help of the teacher. Knowledge of the object of cognition requires more guidance from the teacher, who should make the students clear about the essence of learning English, i.e., it is the process of expressing one's thoughts in another language, so that the students can know the regularity of English itself. As university English learners, students have already possessed strong thinking ability, the ability to identify things and think and summarize, so as long as the teacher is guided, most of the students will be able to recognize and accept the English language, and on this basis, they will form an interest in learning English. Secondly, to help students cultivate a sense of independent learning. The passive way of learning causes many students to learn English poorly and to be afraid of English, therefore, it is necessary to change the students' learning concepts. With an understanding of themselves and the nature of learning English, together with the teacher's guidance and encouragement in terms of learning goals, learning tasks and learning strategies, it is not difficult to establish a sense of independent learning.

2.2.2 Mastering metacognitive strategies

In actual English teaching activities, helping students master various learning strategies is the key to effective learning. First of all, teachers should teach students cognitive strategies for each aspect of English learning, such as listening, speaking, reading, writing, memorizing and translating. And according to different students, they should teach different learning methods to realize targeted guidance. Secondly, teachers should guide students to make effective use of specific learning methods in practice. Although the independent study of college English downplays the “teaching” and strengthens the “learning”, it puts forward different or even higher requirements on the role of teachers, not only needing teachers to go deep into the students' learning practice, but also needing teachers to go deep into the students' heart, to make clear whether the students really mastered the relevant learning strategies and whether they really improved their learning skills. It is not only necessary for teachers to go deeper into students' learning practices, but also for them to go deeper into students' hearts to find out whether students have really mastered the relevant learning strategies and whether they have really improved their independent learning abilities.

2.2.3 Enhancing metacognitive monitoring

If it is the prerequisite for independent learning that students have relevant metacognitive knowledge and awareness of independent learning, and the key to independent learning that students have mastered relevant learning strategies, then strengthening metacognitive monitoring, optimizing the effect of independent learning, and improving the ability to learn independently is the purpose of independent learning. First of all, teachers should instruct students how to effectively monitor and evaluate their own learning, which should be specific to each learning session. They should use the reward and bonus point system in class to encourage students to participate in classroom activities; take the initiative to communicate with students about their independent learning experiences and problems, and propose effective solutions to improve the metacognitive experience and enhance the effect of independent learning. Secondly, teachers should strengthen the monitoring of students' independent learning. In the early stage of independent learning, most of the students' self-control ability is weak, and they need the teacher's monitoring and supervision, especially to monitor the process of students' independent learning after class, and to test and evaluate the completion of tasks and provide feedback on the problems of students.

2.3 Study population

In this study, two classes in a university were selected as research subjects, and a controlled experiment was conducted to further highlight the findings. A university English (1) class was selected as an experimental class, this class had 50 students, and students were guided to independent learning by using an English teaching model based on metacognitive theory in this class. College English (2) class was selected as a control class, this class had 48 students, and in the teaching process, this class insisted on using the traditional teaching model unlike the experimental class. The number of students in the two classes was similar, and the level of students' mastery of English was also very similar, with no significant difference in proficiency. In addition, the English teaching progress of the two classes is basically the same, so the choice of these two classes for the control experiment can fulfill the objective conditions of the experiment.

2.4 Research tools

In order to be able to more accurately and better analyze the effect of the measures taken in this

action research on the cultivation of students' independent learning ability, this study compiled the English Learning Strategies Diagnostic Questionnaire and the Independent Learning Ability Test Questionnaire by means of questionnaires.

(1) The English Learning Strategies Diagnostic Questionnaire

The questionnaire has six parts, namely, memory strategies, cognitive strategies, compensation strategies, metacognitive strategies, affective strategies and social strategies. The questionnaire utilizes a five-point kriging scale ranging from “never” to “always”, with scores ranging from 1 to 5. After students completed the survey, the average of the four section scores was calculated. An average score of 4.5-5 indicates that learning strategies are always used, 3.5-4.4 indicates that they are usually used, 2.5-3.4 indicates that they are generally used, 1.5-2.4 indicates that they are usually not used, and 1.0-1.4 indicates that they are almost never used.

(2) Questionnaire for Testing Independent Learning Ability

It mainly investigates the current status of senior high school students' ability to learn English independently, with 32 questions divided into five dimensions: English learning motivation, English learning time, English learning process, English learning outcome, and English learning environment. Among them, English learning motivation includes four sub-dimensions: students' sense of autonomy, sense of value, sense of self-efficacy and interest in learning. Learning time includes two sub-dimensions: learning goal setting and time planning arrangement. Learning process includes two sub-dimensions: overcoming physical and mental difficulties and self-monitoring. Learning outcomes include three sub-dimensions: outcome checking, outcome evaluation, and self-reinforcement. The learning environment has two sub-dimensions: social environment and physical environment. The same five-point Likert scale format was used.

The results of the reliability coefficients of the two questionnaires were 0.857 and 0.913, with values significantly greater than 0.7. The KMO values were 0.842 and 0.858, which were significantly greater than 0.7, while the Bartlett's statistics values were both 0.000, which was less than 0.001, indicating a high level of significance of the sample data. Therefore, the results of reliability validity analysis of both questionnaires reached the expected level.

2.5 Data collection

The first questionnaire survey was conducted to the students of the two classes before carrying out the classroom practice, and the English Learning Strategies Diagnostic Questionnaire and the Autonomous Learning Ability Test Questionnaire were distributed to the University English (1) class, and the Autonomous Learning Ability Test Questionnaire was distributed to the University English (2) class. A total of 148 questionnaires were distributed and 148 valid questionnaires were collected. When the classroom practice was carried out in the 4th month, a second questionnaire survey was conducted for students in both classes. The questionnaires and the number of students distributed remained the same and all 148 questionnaires were recovered. Both surveys were completed independently by students on the spot within the classroom for 15 minutes. Finally, the questionnaires were entered into SPSS 21.0 data analysis software and analyzed.

3 Analysis and discussion of results

3.1 Analysis of Learning Strategy Use

3.1.1 Overall strategy utilization

By counting the recovered questionnaires one by one, we obtained the learning strategies used by the English (1) class before and after the teaching practice, and the overall situation of the students' use of learning strategies is shown in Fig. 2, and the comparison of their mean scores is shown in Table 1. The mean scores of the learning strategies after the teaching practice are higher than those before the teaching practice, with an increase of 0.53, 0.64, 0.70, 1.50, 0.58, and 0.61, respectively. In particular, the mean score of metacognitive strategies was 1.50 points higher than that before the teaching practice, an increase of 64.14%, from “usually do not use this learning strategy” to “usually use this learning strategy”. It can be seen that the level of metacognitive strategies can be improved through training, and the training of metacognitive strategies should be emphasized in order to cultivate students' autonomy in English learning.

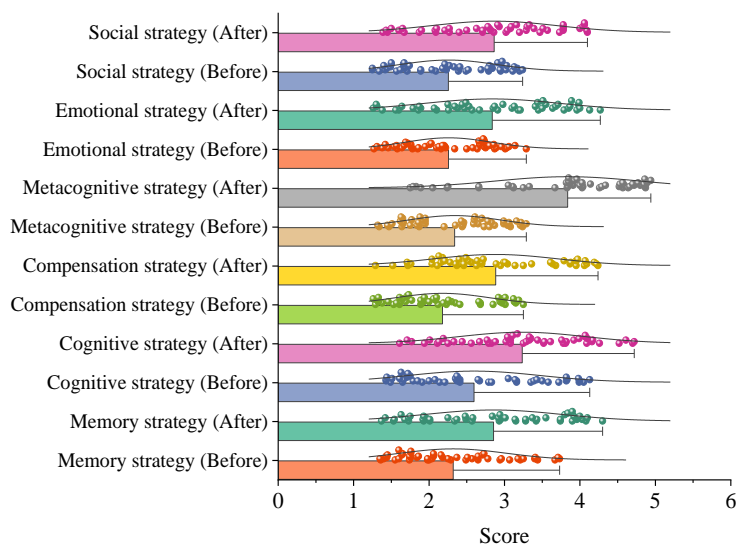


Figure 2: The overall situation of students' learning strategies

Table 1: The average comparison of the learning strategy use

| Dimension | | Mean | Growth rate/% | SD | Max | Min |
|------------------------|--------|------|---------------|-------|------|------|
| Memory strategy | Before | 2.32 | 23.00% | 0.705 | 1.35 | 3.73 |
| | After | 2.85 | | 0.898 | 1.37 | 4.30 |
| Cognitive strategy | Before | 2.60 | 24.59% | 0.871 | 1.43 | 4.13 |
| | After | 3.23 | | 0.835 | 1.61 | 4.72 |
| Compensation strategy | Before | 2.18 | 32.35% | 0.621 | 1.26 | 3.25 |
| | After | 2.88 | | 0.822 | 1.29 | 4.24 |
| Metacognitive strategy | Before | 2.34 | 64.14% | 0.608 | 1.32 | 3.29 |
| | After | 3.84 | | 0.963 | 1.75 | 4.94 |
| Emotional strategy | Before | 2.26 | 25.66% | 0.570 | 1.27 | 3.29 |
| | After | 2.84 | | 0.889 | 1.26 | 4.27 |
| Social strategy | Before | 2.26 | 26.90% | 0.631 | 1.25 | 3.24 |
| | After | 2.86 | | 0.822 | 1.39 | 4.10 |

3.1.2 Metacognitive strategy use

The comparison of the use of each metacognitive strategy is shown in Table 2. The use of metacognitive strategies by the students in the English (1) class is significantly better than that before the classroom practice. 44.67% of the students chose “fully meet”, 37.47% chose “usually meet”, and 82.14% of the students had clear English learning goals and study plans. A total of 82.14% of the students have clear English learning goals and learning plans, and pay attention to monitoring and evaluating their own learning. Under the guidance of metacognitive theory, students in the experimental class have stronger motivation to learn, begin to pay attention to their own learning methods, take the initiative to create an environment conducive to learning, are able to choose their own learning content, regulate their own learning strategies, self-manage and plan their own learning time, and make self-judgments and evaluations of their learning results.

Table 2: Comparison of the use of metacognitive strategies

| Metacognitive strategy | Sometimes fit | | Usually fit | | Completely fit | |
|--|---------------|--------|-------------|--------|----------------|--------|
| | Before | After | Before | After | Before | After |
| Clear English goals | 37.50% | 2.00% | 8.90% | 24.20% | 6.00% | 68.00% |
| Develop learning plan | 12.90% | 10.10% | 18.10% | 19.20% | 6.50% | 66.70% |
| Attention to progress and shortcomings | 22.60% | 12.10% | 11.70% | 30.30% | 7.20% | 52.00% |
| Explore learning methods | 12.90% | 4.00% | 12.10% | 66.60% | 4.50% | 34.00% |
| Communication learning experience | 14.10% | 11.10% | 10.90% | 54.50% | 2.00% | 28.00% |
| Cross channel learning | 8.90% | 2.00% | 8.50% | 72.70% | 7.20% | 21.20% |
| Grasp the learning machine | 27.00% | 33.30% | 4.50% | 30.30% | 4.00% | 30.30% |
| Actively seek help | 32.30% | 37.30% | 2.50% | 31.30% | 2.00% | 20.00% |
| Summary learning method | 41.90% | 3.00% | 24.60% | 32.40% | 6.50% | 52.50% |

3.2 Analysis of self-directed learning capacity

In order to better investigate the effects of using the metacognitive strategy teaching model on the independent learning ability of college English, independent samples t-tests were conducted on the pre-tests and post-tests of the college English (1) and college English (2) students from six dimensions, respectively, and the differences between the pre-tests and the post-tests were analyzed as a whole.

3.2.1 Analysis of pre-test data

The data from the pre-test questionnaires of the two classes were analyzed as shown in Table 3. Before the classroom practice, the total mean score of the students' English independent learning ability in class (1) was 3.209, and the total mean score of the students' English independent learning ability in class (2) was 3.173, and the total mean of the two classes differed by 0.036, which is not statistically significant ($P=0.256>0.05$), that is to say, before the experimentation of the teaching model based on the metacognitive theory, the English independent learning ability of the students in the two classes is almost the same. At the same time, there is no significant difference between the two classes in the six aspects of English learning motivation, English learning time, English learning strategies, English learning process, English learning results and English learning environment ($P>0.05$), and the differences in English independent learning ability are small, which meets the objective requirements for the research subjects of this experiment.

Table 3: Data analysis of the previous survey of the two classes

| Dimension | Class | Mean | SD | t | p |
|-----------------------------|-----------|-------|-------|-------|-------|
| Learning motivation | Class (1) | 3.154 | 0.554 | 1.039 | 0.271 |
| | Class (2) | 3.091 | 0.512 | | |
| Learning time | Class (1) | 3.264 | 0.423 | 0.552 | 0.529 |
| | Class (2) | 3.144 | 0.427 | | |
| Learning process | Class (1) | 3.145 | 0.364 | 1.496 | 0.186 |
| | Class (2) | 3.217 | 0.352 | | |
| Learning results | Class (1) | 3.219 | 0.648 | 1.134 | 0.207 |
| | Class (2) | 3.206 | 0.656 | | |
| Learning environment | Class (1) | 3.263 | 0.624 | 1.249 | 0.183 |
| | Class (2) | 3.206 | 0.618 | | |
| Autonomous learning ability | Class (1) | 3.209 | 0.436 | 1.392 | 0.256 |
| | Class (2) | 3.173 | 0.475 | | |

3.2.2 Post-test data analysis

The data analysis of the post-test questionnaire is shown in Table 4. After the classroom practice, the total mean score of English independent learning ability of the students in the university English (1) class was 3.590, and the total mean score of English independent learning ability of the university English (2) class was 3.210, and the difference of the total mean score of the two classes was 0.38, which was statistically significant ($t=6.323$, $p=0.000<0.01$). (The total mean score of students' English independent learning ability in class (1) improved by 11.87% compared to the preclassroom practice, and at the same time improved by 11.84% compared to the students in class (2). Therefore, after the experiment of the teaching model based on metacognitive theory, the independent learning ability between the two classes has obviously changed, and it can be found that the English independent learning ability of the students in the university English (1) class has been significantly improved, while the improvement of the English independent learning ability of the university English (2) class is obviously relatively weak.

In addition, after participating in a four-month teaching experiment guided by metacognitive theory, the students in the English (1) class of the university have seen changes in the five aspects of English learning, namely, motivation, time, process, outcome, and environment, which have been increasing day by day, and their English independent learning ability has gained a significant enhancement.

Table 4: Data analysis of the after survey of the two classes

| Dimension | Class | Mean | SD | t | p |
|-----------------------------|-----------|-------|-------|-------|----------|
| Learning motivation | Class (1) | 3.552 | 0.498 | 4.789 | 0.006*** |
| | Class (2) | 3.108 | 0.508 | | |
| Learning time | Class (1) | 3.665 | 0.354 | 4.244 | 0.002*** |
| | Class (2) | 3.236 | 0.442 | | |
| Learning process | Class (1) | 3.569 | 0.279 | 5.155 | 0.007*** |
| | Class (2) | 3.232 | 0.343 | | |
| Learning results | Class (1) | 3.546 | 0.515 | 5.285 | 0.003*** |
| | Class (2) | 3.255 | 0.607 | | |
| Learning environment | Class (1) | 3.619 | 0.541 | 4.368 | 0.001*** |
| | Class (2) | 3.217 | 0.612 | | |
| Autonomous learning ability | Class (1) | 3.590 | 0.354 | 6.323 | 0.000*** |
| | Class (2) | 3.210 | 0.428 | | |

3.3 Correlation analysis

According to the data analysis of SPSS 26.0, Pearson correlation analysis was used to discuss the overall correlation between English learning strategies and independent learning ability as well as the correlation of each dimension among the students of English (1) class in the university.

3.3.1 Overall relevance

The Pearson correlation analysis of English learning strategies and self-directed learning ability is shown in Table 5. The correlation analysis mainly depends on the significant value p-value. When the p-value is less than 0.05, the correlation is significant. When the p-value is less than 0.01, the correlation is highly significant. It can be seen that the p-value is 0.000, which is less than 0.01, indicating that English learning strategies are significantly correlated with autonomous learning ability, and the correlation coefficient r-value is 0.586, which indicates that English learning strategies and autonomous learning ability show a significant positive correlation, i.e., the more the learning strategies are, the more the learners are autonomous.

Table 5: The overall correlation analysis result

| | English learning strategy | |
|-------------------------------------|---------------------------|----------|
| English autonomous learning ability | Pearson correlation | 0.586*** |
| | Sig. (double tail) | 0.000 |
| | Case number | 50 |

3.3.2 Dimensional correlations

In order to obtain detailed information about learning strategies and independent learning ability, the correlation between the dimensions of English learning strategies and independent learning ability was analyzed, and the results of the study are shown in Fig. 3, with ** indicating $p < 0.01$ (two-tailed test) and * indicating $p < 0.05$ (one-tailed test). Through the analysis of the dimensions of English learning strategies and independent learning ability, there is a certain correlation between the dimensions of English learning strategies and independent learning ability of the students of University English (1) class. In terms of metacognitive strategies, there is a significant correlation between metacognitive strategies and students' independent learning ability in English in general ($p=0.000 < 0.01$) and a significant positive correlation ($r=0.694 > 0$). The specific correlations are as follows: metacognitive strategies have a very strong correlation with learning motivation, learning time, learning process, and learning outcome ($p=0.000 < 0.01$), and all of them show a certain positive correlation ($r > 0$), among which the highest correlation is with learning motivation ($r=0.679$). In addition, there was no correlation between metacognitive strategies and learning environment ($p=0.073 > 0.05$). This result shows that metacognitive strategies are closely related to independent learning, metacognitive strategies play a key role in independent learning, and metacognitive guidance is needed to improve students' English independent learning ability.

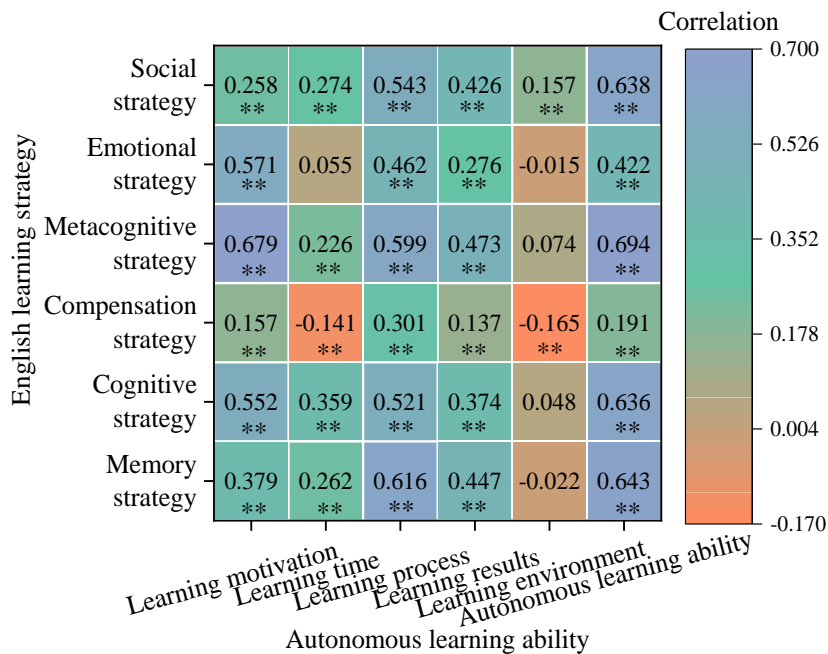


Figure 3: Analysis result of each dimensional correlation

4 Conclusion

English is an important subject, and the quality of English teaching will ultimately have a significant impact on the English proficiency of college students. In this study, two classes of students in a university are selected for classroom practice, and a teaching model based on metacognitive theory is proposed, aiming to improve students' independent learning ability through metacognitive guidance.

The pedagogical design of metacognition in college English independent learning is divided into three aspects, namely, enriching metacognitive knowledge, mastering metacognitive strategies and strengthening metacognitive monitoring. After classroom practice, the experimental students' scores of metacognitive strategy use increased by 64.14%, students' metacognitive awareness was improved and metacognitive ability was developed. At the same time, the experimental students' independent learning ability in English increased dramatically, which was 11.87% higher than before the experiment as a whole and 11.84% higher than that of the control students, and there was a significant difference between the independent learning ability of the students in the two classes after the experiment ($p < 0.01$). This suggests that it is feasible to improve students' English independent learning ability through the metacognitive-guided teaching model, and students' English learning motivation, time, process, outcome, and environment were significantly developed. In addition, the correlation analysis confirmed the significant positive correlation between metacognitive strategies and English independent learning ability, with a correlation coefficient of 0.694, $p < 0.01$.

In conclusion, metacognitive strategies are the links and bridges to realize independent learning, and they are the key factors to develop learners' autonomy. The application of metacognitive theory in the process of English learning can cultivate and effectively improve learners' independent learning ability, which makes learners form their own English learning strategies and methods according to their own actual situation, and can combine a variety of ways to improve the efficiency of English learning.

About the Author



Chaoyi Huang was born in Fuzhou, Fujian, China, in 1982. She received her bachelor's degree and master's degree from Fujian Normal University. Now, she works at Fujian Chuanzheng Communications College. Her research interests include English applied linguistics and English teaching.

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