

Investigation and Research on the Cultivation and Application of Metacognitive Strategies in Autonomous Learning in Colleges

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Abstract: Taking undergraduates as the research object, this paper investigates and evaluates the changes of students' autonomous learning ability with active intervention that learners study and practice metacognitive strategy, so as to reveal what impact learners' practice of metacognitive strategies has on improving their autonomous learning ability.

Keywords: Metacognitive Strategy; Autonomous Learning; Education

1. Introduction

In the era of educational globalization and electronics, learners can have access to intelligent terminals easily, breaking the restrictions of time, space, region and equipment, and learn anytime and anywhere, which provides more possibilities for the autonomous learning of learners in college. As a learning strategy theory, metacognitive learning strategy helps learners to carry out efficient autonomous learning.

Most researches on the cultivation of metacognitive learning strategies are mostly based on the perspective of teaching. This paper will be based on the perspective of students to explore the connection between the cultivation of metacognitive learning strategies and autonomous learning ability.

2. Literature review

Metacognition, which focuses on people's self-consciousness and self-control of cognitive activities, was first proposed by American psychologist Flavell in 1976. Its three levels, metacognitive knowledge, experience and monitoring, restrict and promote each other. If cognitive activity focuses on the objective world, metacognitive activity focuses on human itself (Lu Lingli, 2016). Metacognitive strategies for language learning include: selective attention, preparation in advance, concentrated attention, self-management, practice in advance, self-monitoring, delayed expression and self-evaluation (Shi Xiaowei, 2010). The core of this theory is to emphasize learners' planning, monitoring and regulation.

Autonomous learning as a kind of learning style demands that the learners have control over their own learning objectives, learning contents, learning methods and learning process. It is a process of learners' self-exploration, self-selection, initiative and constructiveness, which requires learners to be completely responsible for their own learning without the direct control of teachers in any environment.

Connectivity 24 hours causes the following problems for self-learning in colleges, including the lack of awareness and ability of autonomous learning, unclear learning goal, ineffective self-regulation and self-reflection evaluation and low efficiency in information screening (Huang Shanshan, 2019).

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Autonomous learning and metacognition are closely related, interact and reinforce each other. Metacognitive strategies as the fuel of self-learning play an important guiding role in autonomous learning, providing an effective means to improve the efficiency of autonomous learning, and it is also an indicator of students' autonomous learning ability. Improving autonomous learning ability is its goal and result (Jin Ruixia, 2017). Relevant studies at home and abroad show that the application of metacognitive strategies plays a positive and significant role in stimulating students' learning motivation, optimizing learning methods, enhancing self-monitoring ability, and promoting academic performance. Therefore, carrying out and strengthening metacognitive strategy training in colleges and universities is of great significance to cultivate students' autonomous learning ability and improve the efficiency of autonomous learning in ubiquitous learning environment (Yang Shaolin, 2011).

3. Research design

3.1 Research methods and questions

Through questionnaire survey, comparative experiment and interview, the following two problems are solved: ① Can learners improve their autonomous learning ability by studying and practicing metacognitive strategies? ② Which of the three metacognitive strategies, planning strategy, monitoring strategy and evaluation strategy, has the greatest impact on students' autonomous learning ability?

3.2 Research ideas

Based on metacognitive strategies, a questionnaire is given to more than 125 college students to investigate on what they do in their self-directed learning. Among them, 60 English majors and 20 other majors participated in metacognitive strategy training and contrast experiment. Through a sample survey, we interviewed 20 former respondents who never received the training. The changes of their autonomous learning ability during this period could be found by data comparison.

3.3 First survey

In the survey on what the undergraduates do in their self-directed learning and how much they know about metacognitive strategies, we found that 70% of the respondents knew nothing about the strategies. Most of them confirmed that their learning attitude, learning goals and professional hobbies had a great influence on their autonomous learning. Those with average autonomous learning ability accounted for 75%; Those with clear learning goals and various learning methods accounted for about 60%. Making learning plan, punching card learning and peer supervision are common regulatory strategies. Peer discussion, independent learning and Internet search are popular learning methods.

3.4 Metacognitive strategy training and contrast experiment

60 juniors in English major and 20 juniors in non-English major participated in the three-month metacognitive learning strategy training and practice. The training focused on the monitoring strategy and evaluation strategy, from the initial theoretical cognition to the specific plan, monitoring and evaluation strategy, from the daily summary and reflection to the monthly self-evaluation and goal adjustment.

In order to explore whether the change of students' autonomous learning ability is related to metacognitive learning, we also investigated 20 respondents that did not participate in metacognitive strategy training to evaluate their autonomous learning ability during this period, as to exclude the possibility of learning ability change caused by the change of academic pressure.

4. Data analysis and discussion

Except for the hours in the class, we counted the hours the respondents spent on self-learning every week, and compared the data before and after the training. ① After the training, the frequency of respondents' autonomous learning has increased significantly, Those whose self-learning spanned 4-5 days per week accounted to 35% from 12% increasingly and the daily learning time has also increased. The number of respondents having independent study for more than 3 hours per day is on the rise. ② Learning attitude are more positive. After the training, the respondents have stronger control over autonomous learning with more systematic planning method and more scientific evaluation. Therefore, metacognitive strategies have a significant positive correlation with autonomous learning behavior. It shows that students benefit from the training of metacognitive

strategies, and can plan, monitor and evaluate their learning behavior, so as to improve their ability of autonomous learning.

In the untrained group, the weekly autonomous learning time of the respondents also increased, but not sharply, which is due to the more pressure from examinations at the end of the semester.

In the interview, most respondents feel that metacognitive learning strategies help their autonomous learning ability. Many believe that a clear understanding of the process of learning and cognition can greatly improve their learning efficiency. Many confirm that self-learning ability strengthens only after a long-term training. In addition to the correct learning methods, to have great self-directed learning ability, the respondents have a long way to go but they benefited from the training and believe that these metacognitive learning strategies will play a certain role in later learning to a great extent. In the meantime, we found that the most difficult part is to implement the monitoring strategy while learning alone. When a person is alone, how to plan and manage his time and schedule is a challenge. Often those who can't be interfered but self-disciplined are easier to achieve their goals. The students benefit a lot from strategy practice and value the importance of cognition of self-monitoring and self-evaluation.

5. Conclusion

According to the data and results of our study, we draw the following conclusions: ① According to the engagement in self-directed learning, those equipped with metacognitive strategy do better than those who never participate in metacognitive strategy training. It is obvious that conscious understanding of metacognitive knowledge and strategy intervention can effectively improve college learners' autonomous learning ability. ② The continue and stable improvement of autonomous learning ability still needs conscious training and is influenced by other elements. ③ Among these influencing factors, learning attitude, clear learning goals and great learning passion play essential roles in the autonomous learning.

Autonomous learning under the theory of metacognitive learning strategy is a spontaneous learning behavior for learners. It is suitable and potential for colleges to start the course or training related to metacognitive learning strategy to cultivate students' awareness of learning strategies and even improve their self-learning ability.

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