

An Empirical Study of the Cultivation of Autonomy Through Metacognitive Strategy Training

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Abstract

Many researchers have found that there is an inseparable relationship between learner autonomy and meta-cognitive strategy training, this thesis intends to explore the effectiveness of meta-cognitive strategy training in fostering learner autonomy and English performance in college non-majors learning under the web-based learning environment. The learners involved in the study are classified into two groups, one group accepted the meta-cognitive strategy training. The research adopted questionnaires and final examination achievements to give a quantitative description of the relationship between autonomy and meta-cognitive strategy training and adopted the journals and interviews to give a qualitative description. By using SPSS 13.0 to analyze the data of descriptive statistics, independent samples T-test and qualitative study, the study comes to the conclusions: 1. the meta-cognitive strategy training has a higher effectiveness in promoting the experimental group's learning performance. 2. on the whole, it's effective in promotion of the students' learner autonomy, but not very obvious. The results in five aspects of learner autonomy are different: the training has a distinct effect in promoting the learners' goal-setting, planning and self-monitoring, and has a unobvious effect on the ability of application of learning strategies, extracurricular studying and self-evaluation. The researcher also argues that through the meta-cognitive strategy training to foster the students' autonomous learning ability is helpful but not the only means. Under the web-based college English teaching environment, we should explore more different methods to improve the learners' autonomous learning ability.

Index Terms: learner autonomy; metacognitive strategy training; English performanc

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1. Introduction

To adapt to the new situation characterized by the development of higher education of our country, the Ministry of Education issued College English Curriculum Requirements to further deepen college English teaching reform, according to which, most colleges and universities in China are required to take full advantage of the computer- and- classroom-based teaching models and cultivate students' autonomous learning abilities[1]. Consequently the weak autonomous learning ability of the college students became one of the problems in web-based college English teaching. Most students lack the ability of critical thinking, systematic thinking, divergent

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thinking. Their learning ability is weak, especially the awareness and application of learning strategies are bad. The students have got used to the passive learning style, their independent learning strategies and the independent learning attitudes which are indispensable for autonomous learning are insufficient. They can not arrange their learning tasks. So we are badly in need of developing the college students' autonomous learning ability. Compared with the students of other majors, the Science-and-Technology students' English foundation is weaker, their ability of English autonomous learning is worse. So it is essential to turn the traditional teacher-centered pattern to learner-centered model, and to teach students how to learn effectively in the knowledge explosion epoch. It is more urgent and necessary to develop the autonomous learning ability of the Science-and-Technology students under the web-based English teaching.

2. Literature Review

2.1. Learner Autonomy

The concept of "autonomous learning" stemmed from debates about the development of life-long learning skill and the development of independent thinkers, both of which originated in the 1960s. By 1981 Holec, had defined autonomy as "the ability to take charge of one's own learning, which involves determining the objectives; defining the contents and progressions; selecting the methods and techniques to be used; monitoring the procedure of acquisition; evaluating what has been acquired" [2] He developed this definition further in 1985 by taking autonomy as conceptual tool. Little (1991) also describes learner autonomy as "a capacity for detachment, critical reflection, decision-making, and independent action" [3], which presupposes that the learner will develop a particular kind of psychological relation with the process and the content of his learning. Similarly Nunan(1995) believes that "learners who have reached a point where they are able to define their own goals and create their own learning opportunities have, by definition, become autonomous[4]". Benson and Voller (1997) insist that "autonomy refers to not only an inborn capacity of the learner's actual exercise of their responsibilities for their own learning" [5]. Learners must have autonomous skills and be supported by their teachers with the real opportunities to practice the skills.

2.2. Meta-cognitive Strategy Training

Meta-cognition refers to one's awareness and regulation of one's cognitive states and process (Flavell, 1985) [6]. Meta-cognition includes three parts meta-cognitive knowledge, meta-cognitive strategies, meta-cognitive experience. Meta-cognitive strategies refer to the learning strategies that require planning for learning, thinking about the learning as it is taking place, monitoring one's production or comprehension, and evaluating learning after an activity is completed. O'malley & Chamot(1990) define meta-cognitive strategies as "higher order executive skills that entail planning for, monitoring or evaluating the learning activity" [7]. Meta-cognitive strategy can help learners reduce the blindness, rashness and irrationality in learning. As a bridge which connects the static, inherent meta-cognitive knowledge and the dynamic, observable language learning strategies; meta-cognitive strategies are a series of skills used to direct and regulate language learning activities with sound meta-cognitive knowledge in mind. The meta-cognitive knowledge includes an awareness of what one is learning and the strategies one is employing, a knowledge about the actual process of learning, and an ability to consciously manage and regulate the use of appropriate learning strategies.

2.3. Meta-cognitive Strategies & Learner Autonomy

Holec(1981) had clearly shown the relationship between meta-cognitive and learner autonomy. He described the autonomous learner as "a learner who fixes objectives, defines learning content, selects learning methods, and monitors and evaluates the process towards the objectives" [8]. Wenden (1987) says that "meta-cognition is one aspect of autonomy" [9] So we can see the focus of meta-cognitive theory is precisely on the characteristics of thinking that contribute to students' awareness of being self-regulatory organisms, or of being agents of their

own thinking. If learners are meta-cognitively aware in learning process and able to exert appropriate meta-cognitive strategies, they are inclined to become autonomous learners.

3. The Present Study (methodology)

3.1 Subject

The subjects in the study are 123 non-English majors in Grade One in Shenyang University of Chemical Technology, they come from four paralleled classes majoring in chemistry engineering. They had just finished the national entrance examination and their average score is similar. They are divided into two groups, the control group consists of 63 students, the experimental group consists of 60 students. They all took part in the freshmen assessment test, the examination showed that their English standards are similar, there isn't obvious differences between them. All the students learn English under the web-based teaching model, use the New Horizon College English as their textbook, have the same teacher, same teaching method, same teaching time, the only difference is that the experimental group will receive one term Meta-cognitive strategy training.

3.2 The Contents of Meta-cognitive Strategy Training

Meta-cognitive strategy training was conducted from the following five aspects:

- Setting learning goals and making learning plans. The students in the experimental group should set their own learning objectives and agenda to meet their variety of learning styles and needs apart from the learning objectives set by the teachers.
- Application of the learning strategies. The researchers firstly guided the students to find and discuss the learning strategies they have applied, then described and illustrated the new ones.
- Self-monitoring. By monitoring their learning process, planning for learning, comprehension or production, use of learning strategies, the students can keep themselves on track to meet their learning goals.
- Extracurricular studying. The study try to help the students develop the ability to choose the instructive language materials, collect different kinds of learning materials, participate in the meaningful extracurricular activities, and the ability to judge the advantages and disadvantages of them.
- Self-evaluating. Require the students to evaluate themselves and evaluate each other. Through evaluating, the learners reflect through the cycle of learning. Evaluate whether they achieve what they have attempted to, their own strengths and weakness and then they can adjust their learning plans and strategies.

In order to urge the students in the experimental group to prepare well for the study, before the study, the researcher require the learners to list out their controllable time for English learning and make feasible learning plans according to themselves. The second week, all the participants need to check their progress and achievements, then according to their own condition, they need to adjust their plan in order to they can behave themselves better and the cycle will last for the whole term. Besides, they are required to divide into several learning groups, every week the group will report their progressing in order to get some helping and guiding.

3.3 Instruments

The instruments used to collect and analyze data include language proficiency tests, questionnaire, journal and interview. 1) we use the first term final examination as the tests in order to know how the meta-cognitive strategies training influence the students of experimental group. 2) the questionnaire used in this study is an autonomous English learning ability investigation questionnaire. It includes five aspects, 29 questions. The questions mainly based on the definition and description of the foreign scholars (Holec, Little, Dichson, Wendon); the research and the study of the autonomous learning ability made by the scholars in China (Xiuping Li) [10]; the definition and classification of meta-cognitive strategy by the scholars at home and abroad

(O'Malley & Chamot). A five-point Likert-scale is applied to indicate their statement by choosing among the five responses ranging from "strongly disagree to strongly agree". 3) the researchers conducted some interviews to some individuals and some groups of students in order to find out the opinions to the meta-cognitive strategy training of the experimental group and the changes in the application of the meta-cognitive.

3.4 Data Analysis

SPSS13.0(statistic package social science) was applied in this study to analyze the data collected. A research was conducted to find out the autonomous learning ability of the learners both in experimental group and the control group in the same time before the final examination. The analysis was divided into two steps: 1) Independent Samples T-Test to analyze the differences in the final examination between the experimental group and the control group (table1). 2) Independent Samples T-Test to analyze the difference in autonomous learning ability between the experimental group and the control group (table2).

TABLE I. INDEPENDENT SAMPLES T-TEST AND THE DESCRIPTIVE ANALYSIS FOR THE FINAL EXAMINATION SCORES BETWEEN THE EXPERIMENTAL GROUP AND THE CONTROL GROUP

Class	Number	Mean	Std. Deviation	t	Sig.(2-tailed)
Experimental group	63	74.78	6.88	2.492	0.014
Control group	60	71.37	8.64		

TABLE II. INDEPENDENT SAMPLES T-TEST AND THE DESCRIPTIVE ANALYSIS FOR AUTONOMOUS LEARNING ABILITY BETWEEN THE EXPERIMENTAL GROUP AND THE CONTROL GROUP

Class	The experimental group		The control group		Independent Sample T-test	
	Mean	Std. Deviation	Mean	Std. Deviation	t	Sig. (2-tailed)
Planing	16.10	3.48	14.82	3.63	1.994	0.048
Strategy application	17.48	3.54	17.43	3.66	0.066	0.947
Self-monitoring	31.92	4.42	29.55	5.62	2.606	0.010
Extracurricular studying	10.06	2.55	10.70	2.61	-1.369	0.174
Self-evaluating	15.11	3.90	14.78	4.04	0.458	0.648
Total score	90.67	13.95	87.28	14.67	1.311	0.192

4. Result Analysis

4.1 How the Meta-cognitive Strategy Training Influence the English Achievement

From table 1, we can see that the final examination average score of the experimental group is higher than that of control group, Samples T-Test shows that there is an obvious differences between the experimental group and the control group.(t= 2.492). Therefore, we can see that the English learning achievement of the experimental group is improved obviously in the final examination. The result is similar to the previous study. (Jing

Xiao, Niannian Zuo, 2006; Jun Li, Hangying Ni, 2007; Jingfang Shi, 2009) [11]. If the autonomous learning ability was improved quickly in the same time?

4.2 *How the meta-cognitive strategy training influence the autonomous learning ability*

Table 2 shows that after one term of meta-cognitive strategy training, the autonomous learning ability of the experimental group (mean= 90.67, Std.Deviation=13.95) is higher than that of the control group (mean= 87.28, Std. Deviation=14.67). These data shows that meta-cognitive training strategy played an active role in developing the participants' autonomous learning ability in some degree. But, Samples T-Test indicates that there is no obvious differences between the experimental group and the control group in autonomous learning ability as a whole ($t=1.311, p=0.192 > 0.05$). On the other hand, Sample T-Test demonstrates that there is significant difference ($p=0.048 < 0.05$; $p=0.010 < 0.05$) in control group and the experimental group only in two aspects (planning and self-monitoring) among the five aspects of the autonomous learning. From the above data, we may see that the experimental group's planning and self-monitoring are significantly higher than those of the control group after the meta-cognitive strategy training. In another words, the students in the experimental group have a stronger ability and a better awareness than the control group in goal-setting, plan making, time-planning, self-monitoring, while there is no obvious difference between the experimental group and the control group in application of the different learning strategies, choose the appropriate learning materials outside the class according to one's own interest and standard and self-evaluating ($p=0.947 > 0.05$; $p=0.174 > 0.05$; $p=0.648 > 0.05$). We can make the conclusion that there is a limitation in this meta-cognitive strategy training in these three aspects.

4.3 *Qualitative findings*

By analyzing the data collected from the surveys, the researcher obtained the following findings:

The students' consciousness of goal-setting and planning strengthened. Before accepting the meta-cognitive strategy training, they seldom made plans for their study, after the training most of them can have a clear goal. Their goals can basically divided into two classes: the first one is for the examination, that is passing the final examination and Band Four and Band Six examination. The second class is for application of English, that is, they learn to use English. In the part of making plan, all the participants can make a plan according to their own situation. After making of the plan, most of the participants can arrange their studying according to their plan and most of them spend more time on English.

The participants are more active and more voluntary to use monitoring skills in the process of learning English. The students know how they get and how well they reach their goals; they think about the process they are making in learning; they judge their ability in English learning; they think about how to do better next time after a test. From their journals and interviews, there are two reasons can account for their failure in finishing their plans: the first is that their plan is interrupted by some other activities: the extracurricular activities, the social intercourse, other homework. The other reason why they can not finish within the set time is that their low reading speed or forgetting the new words quickly.

In the part of Strategies application, most of the participants think that before the training, they pay little attention to it and they don't know anything about it. After the instruction of the researchers their learning strategies application awareness is improved obviously, but in a very short time (one term), it is difficult for them to comprehend and master the learning strategies, more difficult to use it flexibly..

In the part of extracurricular studying, most of the participants indicate that when making the learning plans they pay more attention to the in class learning and examinations, while ignoring the extracurricular studying, such as collecting the materials, participate in the activities after class. There are two reasons too: one is because they have a bad English foundation, they spend most of their time to deal with the in class learning. The other one is that they lack the self-confidence. After one or twice of the participation in the extracurricular activities, they think their English standard is too weak, and then giving up.

In the part of evaluating, most of the participants explain that before the training they have ever evaluate their studying, but at that time they can not find out their problems, while now they can know their shortcomings,

furthermore, they can adjust their plans according to their evaluations. But, almost all the learners hold that they need the teachers' checking and guiding.

In summary, through the training, most of the learners could use meta-cognitive strategies from consciousness to unconsciousness. And their autonomous learning ability is increased. Especially their abilities of planning and self-monitoring. But our research also shows clearly that there is limitation in the application of learning strategies, choosing the right extracurricular studying material and self-evaluation.

5. Conclusion and Implication

The present study is to cultivate the autonomous learning ability through the training of Meta-cognitive strategies, the result showed that: 1. the meta-cognitive strategy training has a higher effectiveness in promoting the experimental group's learning performance. 2. on the whole, it's effective in promotion of the students' learner autonomy, but not very obvious. the results in five aspects of learner autonomy are different: the training has a distinct effect in promoting the learners' planning and self-monitoring, and has a unobvious effect on the ability of extracurricular studying and self-evaluation.

Considering the effectiveness and the limitation of the meta-cognitive strategy training to autonomous learning ability, the researcher thinks that under the web-based teaching environment, it is necessary for the students to accept the meta-cognitive training. It is not only helpful to improve the students' English performance but also helpful to cultivate the students' autonomous learning ability. Secondly, because this study chooses the students of science and technology as the subjects and their English foundation is weak, the meta-cognitive strategy time should be extended to a longer period. At last, The researcher also argue that through the meta-cognitive strategy training to foster the students' autonomous learning ability is helpful but not the only means. Under the web-based college English teaching environment, we should explore more different methods to improve the learners' autonomous learning ability, furthermore, to develop the learners' comprehensive English ability.

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