Practical Application of Constructivism and Metacognition in Computer-aided College English Teaching

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Abstract. This paper presents a practical application of constructivism and metacognition in college English teaching which is called CAMEL (Constructivism and Metacognitive English Learning). The experimental teaching mode proves to be successful with evidence of students' academic achievement. The paper also emphasized the importance of students' online autonomous learning. It hopes to give some inspirations to all educators for their teaching mode reform.

Keywords: computer-aided teaching, constructivism, metacognitive strategy, teaching mode

1. Introduction

In January 2004, the Higher Education Department of Education Ministry has published a new Syllabus (the requirements for college English teaching) , which clearly pointed out: "Our universities should make full use of the multimedia and web technology, adopt new teaching mode and change the traditional "teacher-centered" teaching mode into a "student-centered" one. In recent years, studies on constructivism teaching theory, knowledge of metacognition and students' autonomous learning have been flourishing. Some based their research on theory while others on experiments or investigations. The writer has both used the constructivism teaching theory and the knowledge of metacognition in her computer-aided college English teaching.

2. Constructivism Teaching Theory And The Knowledge Of Metacognition

As the main branch of cognitive learning theory, the theory of constructivism is based on psychologist F.C.Bartlett's "Schema Theory" which was put forward in 1932. Later, Nunan further developed this schema theory who thought the knowledge in one's mind was all built on one's previous experiences. Constructivism teaching theory believes that learning is a process of acquiring knowledge. Knowledge is not directly passed on by instructors, but acquired through means of meaning construction by using necessary learning material under certain environment or cultural background and with the help of others (including teachers or learning partners). Whether the learner can acquire much knowledge depends on his capacity of constructing related information according to his previous experiences. While his capacity of memorizing and reciting teachers' instructions can't help him build it. (He kekang 1997)

From the above theory, we should be aware of the fact that when teachers doing foreign language teaching, their roles should be changed from the traditional knowledge transmitters into instructors, advisors and counselors. Language teaching should not be a process of gathering language materials, teaching some individual language points, but be a process of helping students assimilate the received information and construct it by and for them.

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How to help students construct information autonomously and what are the concrete methods? The writer has both used the teaching theory of constructivism and the knowledge of metacognition in her real teaching mode with the help of multimedia classroom and the web. The writer thought the following aspects should be taken into consideration.

2.1. How to implement constructivism teaching theory in multimedia classroom

The multimedia classroom in our university is usually equipped with a big screen, an overhead projector and a master control computer which is not connected with campus network or internet. Usually there are 35 students in each class. In order to help the students overcome their laziness and dependency brought up by the traditional teaching mode and form a good learning habit that is autonomous learning habit, students are divided by 5. They should participate in classroom learning through activities of presentation, role play, group discussion, debate and so on. Their classroom performance will partly decide their final term score. While at the beginning, some students began to worry that their performance would affect their final score. While at the beginning, some students began to worry that their performance would affect their final score. That's why they asked to be in the same group with those "good students". Others even refused to do presentation. They only spoke two or three sentences in role play activities, and became "listeners" in group discussion and debate. Individual talk shows that students are lack of confidence. They are not willing to show themselves independently in front of the others. They prefer the activity of role play since others would pay more attention to their "performance" instead of their "words". Some students are not accustomed to "student-centered" teaching mode. They don't know what they have learned from the class if teachers don't show the main language points and sentence structure on the screen and make further detailed explanation. In order to solve these problems, students were asked and encouraged to do courseware including words and sentence patterns in the unit; background information etc. to show what they have learned from it. Multimedia classroom provides the students with the opportunity of showing their talents .Constructivism theory tells us that knowledge is not an accurate reflection of the reality but some kind of explanation or some kind of assumption; it is not the final answer of the question. Knowledge is a process. It is not a production. It doesn't need to be transmitted from teachers to students. It needs to be constructed by the learners themselves. Students' accustomed laziness and dependency should be changed totally. They need to bring their wisdom into full play. They need to process the information received from the textbook, the teacher and the internet, try to seek out the meaning and connect it with his previous knowledge. In this way, they would form the habit of autonomous learning. That is the capacity of metacognition from theoretical level

2.2. Training for students' capacity of metacognition

"Metacognition" proposed by John Flavell, one of the founders for American social cognitive psychology, professor of Standford University, based this theory on the research of children's thinking process. Metacognition refers to the subject's cognition of his cognitive actions. The knowledge of metacognition includes the knowledge of cognitive subject, the cognitive mission and cognitive strategies. At this time, students may simply aware that they should construct the new received information and immerged in their cognitive experiences. That is the duty of the teachers to instruct students to gradually master the cognitive strategies of learning. In order to grasp cognitive strategies, students need to do the followings:

Setting up learning aims for the semester

Choosing some language learning materials that fit for them with help from the teacher

Setting up learning skills. Students should be aware of their own efficient language learning skills that can help them improve their language ability fast.

Choosing proper study time, place and learning schedule

Self-evaluation and peer-editing

Students can evaluate their performance on their own or to ask their teammates to evaluate it then they would know their limitations in learning. Meanwhile they can learn from each other.

3. Students' Online Autonomous Learning Under Constructivism Learning Theory

Those individual problems appeared in multimedia classroom teaching activities and the process of students' formation of cognitive strategies should be solved respectively. Students using computers to do autonomous learning in computer rooms supplement these limitations. At the start of the term, each student has already got his user's name for online autonomous learning in computer rooms. In order to help our students improve their English ability. The teacher has assigned some detailed questions for the students to finish. For each unit, students should finish the following assignments: 1) Finish the listening questions and preview the unit 2) Complete the comprehensive questions with what you have learned from the unit. All questions have time limits so students should finish them on time. If they have finished all, they can press "submit" then the system would give them referential answers and relevant explanations for them to learn. At the same time, the teacher would receive students' answers for the comprehensive questions. After the teacher's correction, she will show the best answer to all her students through the screen or give some explanations towards students' common mistakes. All these are done without mentioning students' names. In this way, most of them can save their pride. 3) Since the students have understood the unit, know the new words, sentence patterns and various ways of expressions, they can write a composition of about 150 words adding their own views. The teacher would see students' compositions in her mailbox. During the reiteration, students would rehearse vocabulary and sentence patterns in the unit, know the real society from it, most importantly construct new information according to their previous experiences. Knowledge would naturally be constructed in the setting.

In conclusion, the students' learning process both in multimedia classroom and in online autonomous learning computer room can be shown in the following table:

Table 1. Students' autonomous learning process
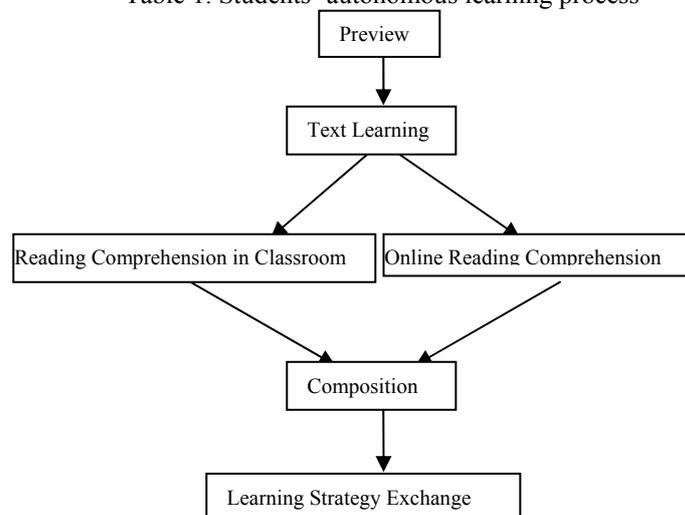
4. The Practical Application Of Camel

The writer has chosen two classes for the new teaching mode experiment. In the experimental class, the writer has both used the constructivism teaching theory and students' metacognition. The students also have online autonomous learning time. While in the control class, the teacher used traditional teacher-centered teaching mode. And they have no online autonomous learning class. But both are in multimedia classroom. After one and a half years, the writer has got the following record:

Table 2. Comparison of students' academic achievement

Class	Experimental Class (35students)	Control Class (36students)
Entrance Exam Score	55.3	56.2
First Term Score/Oral English Score	63.4/ 64.13	62.5/ 63.2
Second Term Score/Oral English Score	65.8/ 66.5	63.2/ 64.6
Third Term Score/Oral English Score	68.3/ 72.1	64.5/ 66.1

The chart shows that students have comparatively improved their English test ability. Individual talk shows that students prefer online autonomous learning and learning strategy exchange. They say they have both improved their oral and writing English ability and at the same time, they have improved their cooperative spirit.

5. Conclusion

The mode of multimedia classroom teaching + students online autonomous learning has greatly aroused students' learning interest, helped and improved their capacity for knowledge construction. There are also good interactions between teachers and students, students and students. Students have changed from "Want me to study" to "I want to study". But should we be aware that is it too late for the change of teaching mode only when students enter universities, when their characteristics, their learning habits, their way of life have already been formed. After two years English learning, can we change their life-long learning habits?

This study on constructivism learning theory and students' capacity of metacognition aims at give some inspirations to all educators. The traditional spoon-feed education has strangled our children's creativity, their ability for critical thinking and their cooperative spirit. I do hope all educators would work together to improve the teaching mode since it's never too late to mend.

6. Acknowledgements

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