Application of Data Based Hierarchical Teaching Method in English Flipped Classroom in Undergraduate Colleges

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Abstract

Through the investigation and analysis of the teaching effect of flipped classroom in Undergraduate English, this paper studies and demonstrates the effective integration of traditional Undergraduate English teaching and flipped classroom teaching. At the same time, this paper expounds the advantages, disadvantages, urgency and necessity of implementing the flipped classroom reform and innovation based on micro class in Undergraduate English teaching, as well as the key factors restricting it. This paper attempts to explore and promote the mixed flipped teaching mode of Undergraduate English to improve the teaching effect. This paper puts forward the teaching method of upgrading multimedia teaching facilities, constructing micro course network learning platform and teaching resource database. At the same time, this paper expounds the influence of strengthening the flipped classroom teaching design, constructing a new hybrid flipped teaching mode and teaching monitoring and evaluation system on the traditional Undergraduate English classroom teaching. The experimental results show that the effective flipping of English classroom in Undergraduate colleges can only cultivate high-quality innovative talents with cross-cultural communication ability and international vision by maximizing learners' learning potential..

Keywords*: College English, flipped classroom, teaching effect, teaching monitoring.*

I. Introduction

The rapid development of information and electronic technology has brought mankind into a new information age. The information technology represented by computer and Internet has not only changed people's way of work, way of life and way of communication, but also brought a huge impact on the field of education. At the same time, it puts forward higher requirements for personnel training [1-2]. The in-depth development of higher education informatization requires colleges and universities to actively explore new teaching methods, reform personnel training methods, keep up with the pace of the times, cultivate students' ability to acquire knowledge for life, establish the idea of lifelong education, and make them have the skills and qualities of sustainable development [3].

The new comprehensive course of practical English is a public English teaching material compiled by the Ministry of education's former English Teaching Steering Committee of Undergraduate education and the whole country in accordance with the basic requirements of English Teaching in Undergraduate education [4]. It is a new type of practical English teaching reform textbook recommended by the English Teaching Steering Committee of Undergraduate education to the national Undergraduate colleges. It is the national planning textbook of the 12th Five Year Plan and the excellent textbook of general higher education. How to use advanced teaching ideas and scientific teaching methods for the curriculum and teaching research of this textbook has both theoretical value and practical significance? Flipped classroom has become a new teaching concept in China. Many educators have joined in the teaching reform based on the flipped classroom teaching concept, trying to change the disadvantages of the traditional teaching mode [5-7].

II. The design of flipped classroom in Undergraduate English Teaching

2.1 Teaching resource design

(1) Design principles

Different from the traditional classroom, in the traditional classroom teaching, teachers and students impart knowledge face to face. Teachers can intuitively judge the students' absorption of knowledge through the students' reaction and answering effect, so as to adjust the teaching content and answer questions in time. In the pre class learning stage of flipped classroom teaching, teachers are unable to get the students' response in time, so teachers should pay attention to the correctness of teaching content when making micro class [8]. Once there is wrong information in the video and it has not been corrected in time, it will have a negative impact on students' learning and it is hard to correct, and it will also cause students to doubt the level of teachers' professional knowledge and then not learn.

At the same time, the micro lesson video production should pay attention to the teaching content is concise and clear. Too long video knowledge input will cause students to be bored, unable to digest too much information, but has the opposite effect, to achieve a theme of a micro lesson video. When designing the teaching content, teachers should have a thorough understanding of the teaching materials, make clear the teaching objectives, be good at organic integration of the teaching content, and then make a reasonable video. Ensure that students can understand knowledge points through autonomous learning without the guidance of teachers, and help students build self-confidence [9-10].

Finally, teachers should be good at grasping students' psychology when designing videos. Too much language and too fast speaking speed cause some students' learning difficulties. Therefore, we should pay attention to the diversification of teaching methods to attract students' attention. For example, tagging some key and difficult words or sentence patterns, appropriate pauses, repetition of knowledge points, appropriate questions and even changes in intonation can guide students to think in the direction expected by teachers and help students understand the learning content more deeply.

(2) Micro lesson development

In traditional teaching, teachers only need to reasonably design the ready-made teaching content, but it is far from meeting the needs of teachers' teaching and students' learning in modern teaching. Micro class is designed according to the needs of teachers in class, assisting teaching, with strong theme pertinence. The teaching material selected by the author is divided into eight different topic units, each unit is divided into four parts: speaking, listening, writing and reading. According to the different teaching objectives, the author selected reading and writing two parts to make micro class. Listening and speaking are mainly guided by learning plans, listing the difficult words and basic sentence patterns; The reading materials are in the form of learning guide and video. In addition to explaining the words involved in the article clearly to help understand the difficult sentence patterns, the video is also used to introduce topics and arouse students' thinking. At the same time, it can also help students acquire extensive reading skills, reasoning skills, fast reading skills and so on through micro class to improve their reading ability; Writing mainly adopts the mode of PPT converted into video to standardize the writing format, provide more basic sentence patterns for students, and help students master the practical style correctly.

There are many ways to make micro lesson, which requires a certain degree of computer technology and hardware equipment. It is not easy to make high-quality video. Video is a means of auxiliary teaching, which is useless for students' learning. The video produced only for the sake of science and technology can not achieve the ideal teaching effect. For teachers who are not good at video production and are beginning to participate in flipped classroom, it is a good choice to use the existing videos made by others. Foreign teachers mostly use cameras, microphones, computers, digital input devices and other equipment combined with screen video software to make flipped classroom teaching video. Some of them record teachers and blackboard writing on the same screen, while others display teachers and blackboard writing on separate screens.

2.2 Design of teaching activities

(1) Activity design principles

Flipped classroom is the "flipping" of teaching and learning time and space in the teaching process. In traditional education, classroom is used to teach knowledge, but flipped classroom puts this link in pre class learning, uses video instead of classroom teaching, and classroom time is used to organize teaching activities. This flipping will help English teaching get rid of exam oriented education, pay more attention to the training of students' communication ability, cultivate students' ability of autonomous learning, help them realize the value of learning and assume their own learning responsibility, which is also the core of flipped classroom. Some scholars have put forward that the effective organization form of teaching activities is to combine flipped classroom with group learning, which is an inquiry oriented mode combining goal oriented and problem-based inquiry, which helps students gradually understand the teaching content with learning objectives as the center.

Scholars represented by Zhang Jinlei put forward the idea of integrating game teaching into flipped classroom teaching, which can improve students' interest through games, grasp students' attention, promote bilateral interaction, and effectively transfer specific knowledge to students, so as to achieve the purpose of effective teaching. However, no matter what kind of teaching activity is chosen, teaching activities should be designed on the basis of subject characteristics and specific teaching contents, centering on teaching contents and aiming at promoting learning.

(2) Teacher student activity design
Flipped classroom makes students have a lot of time to carry out interactive activities between students, teachers and students in the classroom to help internalize the absorption of knowledge. How to make the classroom more efficient and cultivate students' effective combination of personalized learning and cooperative learning has become the focus of the author's attention. Students are no longer as empty headed as in the traditional classroom, but come to the classroom with all kinds of questions, can't wait to solve the problems, actively participate in all kinds of teaching activities, cooperate to explore and explain the doubts. The author also wants to make students experience the happiness and achievement of active learning, encourage students to help each other and achieve the goal of common progress. The teaching of language and background culture is the teaching content of English. Different forms of teaching activities are organized according to the requirements of listening (pronunciation), speaking (vocabulary), reading (grammar) and writing (language skills).

A. For vocabulary, the former reports the word, and the latter immediately says its spelling, part of speech and meaning. The loser will be punished, and the winner will be given extra points to test the students' mastery of vocabulary. At the same time, the students' listening and speaking ability can be trained;

B. In view of reading, we design a rush answer session, in which the students judge whether the teacher's opinions are correct or wrong, and the correct respondents usually score extra points to test the students' ability to grasp the article, so as to help students straighten out the framework of the article;

C. For speaking and writing, through the role play display link, check the students' autonomous learning ability and comprehensive application ability before class. According to students' mutual communication, improve students' listening and speaking ability and language organization ability;

D. According to the background culture, teachers can let students explore in groups. According to the task assigned by the teacher, students take the initiative to collect and summarize information through the network or books, and then assign representatives to show the results to the whole class in the form of PPT.

III. The practice of flipped classroom teaching in Undergraduate English

3.1 Teaching experiment design
The author chose the students (51 in total, including 42 boys and 9 girls) from Class 14 computer network class in Hunan Information Institute as the experimental subjects. At the same time, the students in Class 2, Computer Network, Grade 14 were compared (49 students in total, including 41 boys and 8 girls). There is a general

phenomenon that there are more boys than girls in this professional class, and most of them are science students. The author also conducted one-on-one interviews and symposiums in the pilot class. According to the current traditional teaching methods, 27% (14 people) are interested in English, 49% (25 people) are interested, and 24% (12 people) are not interested. Among them, the reasons for disinterest are summarized as follows: (1) poor English foundation and lack of confidence; (2) Can't keep up with the teaching progress and lose interest; (3) Teachers talk too much, which makes it difficult for students to concentrate for a long time; (4) They are eager for success and give up without making progress in a short time.

In addition, before the experiment, the author made a pre-school test on the students' English proficiency in the two classes, and obtained the independent sample T-test analysis results. If the sig value is greater than 0.05, there is no significant difference between the two classes, but if the sig value is less than 0.05, there is a significant difference between the two classes. As shown in Table 1, there is no significant difference in English proficiency between the pilot class and the control class, which is comparable.

Table 1 Pre-school test results of pilot class and comparative class

Class	Number of subjects (N)	Average	Standard deviation	Sig value	Differences
Experimental class	51	57.92	13.073	0.09	Not significant
Contrast class	49	62	10.331		

3.2 Teaching implementation process

(1) The teacher summarizes and answers the students' questions according to the answers of the self-test card (5 minutes);

(2) Memory contest: five people go to the stage to pK (one from each of the five groups selected in advance). The former will report a word (new words in the text) at will, while the latter must write the word on the blackboard and speak out the part of speech and meaning of the word. The group of the loser will be punished, and the group of the winner will get extra points;

(3) Judge right and wrong: the teacher displays the opinions in the article, the students rush to answer to judge right and wrong, and the students usually score extra points;

(4) Acting PK: in the text, there are three teams: China, India and the United States, in which the concept of time in India and the United States is in contrast. The scene is as shown in the text. China made a mistake and didn't go to the appointment until half an hour later. The United States and India have different reactions to it. The roles are decided by drawing lots, with odd number of Chinese and Indian teams performing and even number of Chinese and American teams performing;

(5) Group comments, teacher comments. Praise the excellent group (the whole group usually score), encourage the backward group;

(6) Results show: teachers select 10 excellent dubbing to show to the whole class before class;

(7) In the group discussion, three favorite works were selected and awarded with bonus points to optimize the works. At the same time, teachers provided individual guidance to strengthen the communication between teachers and students;

(8) The teacher leads the students to refine the main points of the text and retell the main points of punctuality.

(9) Teaching reflection

The teaching theme of this class is very attractive to students, especially it can wake up some bad habits of students to some extent, such as being late for class or appointment due to lack of time concept. On the other hand, when students are learning to construct knowledge before class, teachers should always pay attention to students' dynamics and point out common wrong views. In class, teachers should emphasize the reasons to avoid deep-rooted wrong knowledge. In addition, after class review is also an important part. Teachers should encourage students to adhere to practice and form the habit of reviewing old knowledge.

3.3 Implementation effect

After the study, the author conducted a one-to-one face-to-face interview and study group discussion with the students in the pilot class. Statistics show that 18% (9 students) like the English class in the flip classroom mode very much, 41% (21 students) like it, but 29% (15 students) don't care, and 12% (6 students) don't like it. At the group forum, the author also summed up the reasons why students like to turn over the classroom: (1) the time to concentrate in class is longer than that in traditional classroom; (2) Improving active learning ability; (3) Cultivate the ability to analyze and solve problems, and make yourself more confident; (4) Improve communication skills and get closer to the relationship between teachers and classmates; (5) It increases the interest of class.

At the same time, the author specially visited the reasons why 12% did not like it, and summarized it as follows: (1) increased the preschool burden; (2) The foundation is too poor to understand the video in the self-study stage; (3) In group discussions, it is difficult to adapt to face-to-face communication with classmates in English; (4) This new teaching mode is still unacceptable.

In addition, the author made a statistical analysis on the final test scores of the two classes, and obtained an independent sample T-test. If the sig value is greater than 0.05, there is no significant difference between the two classes, but if the sig value is less than 0.05, there is a significant difference between the two classes. As shown in Table 2, there is a significant difference between the existing English level of the pilot class and the comparative class, which proves that students' English scores have been significantly improved through the implementation of the flip class, which is very beneficial to the English classroom teaching reform in Undergraduate colleges, further improving the teaching quality and improving the teaching efficiency.

Table 2 Post-school test results of pilot class and comparative class

Class	Number of subjects (N)	Average	Standard deviation	Sig value	Differences
Experimental class	51	68.51	9.882	0.002	Remarkable
Contrast class	49	62.9	7.657		

IV. Strategies to improve the effectiveness of flipped classroom in Undergraduate English Teaching

4.1 Improve the quality of Teachers

For some teachers, they should change the original teacher + textbook + Classroom cramming teaching mode. It is not easy to learn and implement a new classroom model with unknown teaching effect. They think it is a way to make trouble for themselves and increase the workload. On the contrary, young teachers and new teachers are more willing to accept new ideas and meet challenges. In practice, teachers are still stuck to the traditional teaching concept. When students have questions, they can give answers immediately, instead of guiding students to think actively, find out the answers, construct knowledge and give students the dominant right of learning. This concept goes against the original intention of flipped classroom teaching. For example, when students encounter new words or are unable to translate a sentence with their own knowledge, the first thing they think of is to directly ask the teacher the meaning of the word or how to translate it. Under the concept of flipped classroom teaching, teachers

should change their ideas. Encourage students to guess the meaning of words according to old knowledge or use other known words to express the same meaning, help students build reasoning ability and learn to look at problems from multiple perspectives. If the teacher has been limited to the old ideas, can not summarize the problems in teaching and think about countermeasures, want to improve the teaching effect will become empty talk. Therefore, if the flipped classroom can be carried out continuously, changing the concept of teachers has become the primary problem.

Flipped classroom teaching also puts forward new requirements for teachers' professional ability, such as curriculum development ability, classroom activity innovation ability, teaching knowledge processing ability and so on. Although teachers no longer give lectures in flipped classroom teaching, they still play a leading role in the whole teaching process. Compared with the traditional classroom, teachers have higher requirements for teachers to make pre class learning materials, arrange students' learning time and organize classroom activities. Teachers should not only design interesting and reasonable pre class learning materials to replace classroom knowledge teaching to stimulate students' interest and ensure the continuity of learning, but also organize group activities in classroom teaching to mobilize all students to participate in the activities. In addition, teachers have to deal with students' questions at any time and make comments on group activities, which are new challenges for teachers. Different from the traditional teaching, the flipped classroom teaching in Undergraduate colleges has high requirements for teachers' professional ability, and its challenges to teachers are unpredictable. Students' active thinking in language communication will bring many unexpected emergencies to teachers. In the face of many "challengers", teachers must constantly improve their professional ability to move forward smoothly.
The experimental data are shown in Table 3 and 4.

Table 3 The scores of English autonomous learning ability and the average of each category after the experiment

Total score	Learning motivation	Goal setting	Learning strategy	Cognitive ability
64.65	2.48	2.76	2.37	2.68
47.33	2.46	2.73	2.26	2.42

Table 4 The comparison of the mean of the two classes and the study

	Learning motivation	Goal setting	Learning strategy	Cognitive ability
Experimental class (A)	0.02	0.04	0.13	0.31
Regular class (B)	0.10	0.11	0.02	0.03

Table 2 shows that learning motivation accounts for 2.48% and 2.46% respectively in class A and class B, and goal setting accounts for 2.76% and 2.73% respectively, which indicates that the initial desire and goal selection of the two classes are basically the same, and their classification mean is similar. But the learning strategies are 2.37% and 2.26% respectively, and the difference between them is large, which reflects that the ability of autonomous learning has been greatly improved and the cognitive ability has obvious difference.

4.2 Changing students' learning concept
In flipped classroom teaching, students are the main body of learning, and taking students as the center is fundamental. If students' learning attitude remains passive and waiting for indoctrination in traditional classroom learning, then flipped classroom is difficult to carry out. This means that teachers should pay more attention to the preparation of learning materials before class and the organization of classroom teaching activities, and consider the self-learning ability and knowledge level of most students, so as to attract students to continue learning, reduce the gap between students, build confidence, and gradually change their learning attitude. Simplifying the requirements of teaching activities is a good choice for students at different levels. For example, let students practice from simple sentences, and then gradually increase the difficulty, help students adapt to the new teaching

mode, overcome the shyness, from daring to communicate in English to willing to interact in English. At the same time, students have to face up to the fact that learning is not a task, nor a burden imposed by parents or teachers, but the need to improve their own quality. With this understanding, we never reject learning, and gradually improve our interest in learning through the help of students and teachers, and then take the initiative to learn.

The protagonist of flipped classroom teaching is students, which is also the basis of the classroom. It puts forward higher requirements for students' autonomous learning ability: it requires students to actively watch the learning video prepared by teachers before class, and take notes of the key points, key points and difficulties. Can actively discuss doubts with students to carry out cooperative learning, or find out the answers through the network or reading books, construct new knowledge to carry out inquiry learning, and independently complete the pre class learning card. It also requires students to come to the classroom with questions that can not be solved through cooperative inquiry learning, and actively participate in group discussion, group display and other learning activities to "solve doubts". It also requires students to focus on learning under the guidance of teachers when discussing online learning, eliminate the interference of negative effects such as online games and chatting, enhance self-control and improve self-learning ability at the same time.

4.3 Reasonable design of teaching process
Compared with the traditional paper plate making materials, micro class as a self-study material can attract more attention. But it is hard to avoid that students will feel boring if they want to face a single video teaching for a long time. The design of novel and creative videos can meet the needs of learners at different levels. The lively and emotional language can attract students' continuous learning and is not boring. Compared with a lengthy discussion of knowledge points, interlocking issues are more interesting. Students construct new knowledge by solving the problems of knowledge points, master the key and difficult points, and build self-confidence. Through autonomous learning, we can master the method of outline, and through combing the structure, we can effectively learn the learning content as a whole. In the implementation of classroom activity teaching, sometimes it can not be carried out. The author suggests that problem inquiry discussion should be the main way, and task driven self-study should be used to encourage students to actively participate in discussion and cooperative inquiry to solve problems.

The flipped classroom teaching mode of Undergraduate English teaching is to put knowledge teaching before class, let students learn independently, and complete the learning card and self-evaluation independently through autonomous learning. Students will intuitively think that it increases their learning burden and takes longer to study. In order to implement flipped classroom successfully, we must solve this problem, reasonably arrange the learning time before class, and ensure the students' initiative. In the specific implementation, the author adopts the way of fragmented learning to encourage students to watch videos in their spare time, such as self-study in the morning and evening, recess, before going to bed and so on. The fragmented learning style makes students feel relaxed and free from pressure. They don't have to study at a specific time and place, which makes students psychologically reduce their resistance to a certain extent and accept this new teaching mode.

V. Conclusion

Flipped classroom teaching is a kind of flipping of traditional classroom teaching mode, and also an important breakthrough of teaching change. In recent years, due to the promotion of flipped classroom at home and abroad, more and more educators apply this new teaching method to teaching practice. In this paper, flipped classroom teaching is used as a teaching method in Undergraduate English teaching. The goal of flipped classroom teaching is to help students form "out of exam oriented errors", "autonomous learning", "active construction of knowledge" and "realization of personalized education". I believe that to some extent, this paper can enrich the empirical research of flipped classroom, and provide reference for more front-line teachers.

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