



Construction of a New Interactive Teaching Model Based on Big Data

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Abstract. The era of big data has arrived, and modern internet technology is becoming increasingly strong, which has brought huge challenges to college English teaching. The role of students in teaching has been strengthened, and the education system has also undergone a certain transformation. The transformation of the teaching environment in the context of big data is mainly reflected in the role of teachers, the dissemination of information age, and the improvement of students' self-learning ability. This paper focuses on the interactive mode of English mobile teaching in the context of big data, and combines it with flipped classrooms to design a flipped classroom teaching interaction model based on big data. The application effects of the model are discussed, and the methods to solve the drawbacks of traditional classroom education are explored, in order to provide a theoretical basis for future college English education.

Keywords: Data intelligence, flipped classroom, interactive teaching

1 Introduction

The era of big data has provided a platform for China's English teaching reform, overturned the traditional teaching mode, and made it possible to deeply combine teaching reform with informatization and digitization. The research shows that the flipped classroom is gradually rising in the teaching field of our country. The use of flipped classroom teaching in college teaching can improve students' academic performance and optimize the learning effect [1]. Flipped classroom uses network information technology to move the conventional classroom teaching and after-school consolidation forward to class learning and classroom teaching respectively. The teaching organization form of flipped classroom abandons the collective knowledge teaching in the traditional classroom, avoids the disappearance of learning individuals, and emphasizes the interactive cooperation and communication of students based on individual learning. The flipped classroom is the center of inquiry learning activities and teacher-student interaction. Flipped classroom changes the elements of teaching resources, teaching environment, teaching means and teaching objects, and the relationship between teachers and students turns to be bidirectional, democratic and communicative.

In order to understand the real situation of College English Teaching in China, the author conducted a questionnaire survey on the students of an ordinary undergraduate university in a province. The survey focused on five different types of colleges. The results show that most of the teachers recognize the traditional teaching, and the teachers who use new teaching methods and new media teaching in the classroom are very few. Based on the questionnaire survey and field visit, the following problems exist in College English Teaching:

(1) Outdated teaching concepts

For Contemporary College English teachers, English teaching uses a large number of modern information technology teaching, creating a new English teaching mode, which can provide students with a better English learning environment and language training conditions, but most of the teachers' teaching ideas are still relatively old, and they are not willing to accept new ideas [2]. It can be seen from table 1 that although most teachers can master the office software for course arrangement, they still stay at the stage of using old ideas to narrate textbook knowledge. Teachers understand that it is not efficient for students to learn by themselves, but they are not willing to change their ideas. Students still need to rely on the basis of high school English, so there are many contradictions. In modern universities, CET-4 and CET-6 are regarded as the focus of English learning. For College English teachers, the teaching task is large, and the effect of relying on short-term exercises and words is only temporary, but it is not very effective for students to improve their grades. Teachers fail to clarify and attach importance to the concept of bringing network technology and multimedia technology to students' learning. In addition, the number of teachers using new media teaching to improve students' English performance is small, which also brings some pressure to English Teaching in the context of big data, which is not only a waste of existing public resources, but also half the effort [3].

(2) Teachers' awareness of modern information technology teaching is weak.

Table 1. Teachers' views on College English learning

Survey options (teacher perspective)	1 group (%)	2 groups (%)	3 groups (%)	4 groups (%)	5 groups (%)
For students, the classroom is their main learning place	10.5	11.4	15.8	47.7	22.3
CET-4 and CET-6 become the main standard to measure students' English level	47.6	53.8	42.3	37.7	33.4
The way to improve students' English performance is classroom education and after class exercises	3	5.5	25.8	46.9	29.9
Students can consciously learn English	26.7	17.3	16.4	14.6	6.2
Traditional education has little effect on students' English learning	3.5	8.9	16.8	43.5	39.6
Be able to fully master office software and multimedia software	37	48	55.9	66.4	42.4
Able to complete the courseware independently	69.5	31.9	53.9	63	75
At present, few teachers use new technology in College English Teaching	5	3.5	5.8	12.9	12.5
A few teachers' use of new media teaching can improve students' English Performance	13.6	15.5	20.4	20.7	6.5

English teachers believe that English teaching mainly reflects their own business and teaching ability. As long as the teaching is proper and the English quality is excellent, students can achieve better results, which is obviously due to the weak awareness of modern information technology teaching [4]. It can be seen from table 1 that although teachers can use basic software to edit courseware, they do not understand the technology of video production, after-class exercise software editing and after-class live broadcast. During the interview, the author found that some teachers had used such technology, but the production effect was not good [5].

(3) Students' learning style is backward

Table 2. Students' views on English learning

Survey options (student perspective)	1(%)	2(%)	3(%)	4(%)	5(%)
Mainly using traditional learning methods to learn English	3.3	7.4	12.7	36.4	48.9
Autonomous learning can effectively improve English Performance	2.3	11.4	18.9	32.7	28.4
Effectively and actively complete the task of autonomous learning after class	13.4	14.6	36.1	22.2	8.5
Clear learning objectives and tasks	18.8	38.5	35.3	11.2	3.3
We hope to carry out autonomous learning under the new technology and reform the classroom teaching methods	23.7	35.6	58.3	28.4	13.4
If there is new teaching technology promotion, they can actively complete the teaching and learning tasks after class	42.5	37.9	38.4	22.3	25.3
Actively participate in the learning process and interaction if new teaching technologies are promoted	43.7	42.3	37.8	21.8	16.6
If the new teaching technology is promoted, I believe it can improve the learning effect and learning ability	15.5	13.8	21.3	38.7	27.6

In table 2, 1, 2, 3, 4 and 5 are 5 levels, and the larger the number, the lower the event identity of the statement.

It can be seen from table 2 that the number of students in the five groups is close to 90.5% still use the traditional way of learning, and seldom use the habit of online learning. Although they also realize that they can not only rely on dead learning to improve their English performance, they also hope to use a new way to promote autonomous learning, so that they can be able to deal with the problems they don't understand and don't understand after they leave the classroom teaching. Due to the lack of such learning atmosphere and learning methods, their learning motivation is insufficient and their attitude is relatively negative. In the survey, the author found that students' ability to accept and absorb new things is very strong, so they have a strong driving force for learning new knowledge [6].

(4) Limited teaching equipment and conditions

There are three constraints on teaching equipment, namely, less equipment allocated by the school, too many students in the class, and the high utilization of students' personal computers.

1. The school is equipped with less equipment

The survey results show that there are few multimedia platforms and learning materials download media for English learning in each college. The biggest constraint is that

the school does not provide relevant servers and the logistics department does not maintain relevant servers, so there is no way to expand the teaching methods. The survey found that even if teachers can make video recording and after-school exercise software, the school does not have equipment and network to implement online unified management and playback. In addition, statistics show that the ratio of computers in multimedia classrooms to the number of students in school teaching is about 1:25. Although each college has a speech classroom, there are not many devices that can provide new ways of English teaching.

2. Large class size

As for the communication between teachers and students in class, due to the large number of students in class, teachers can not answer questions and solve doubts for each student, which brings certain pressure to teachers' teaching.

3. Students use more personal computers

In the classroom, more students now use their own computers to record classroom notes. According to statistics, freshmen's probability of using computers is not large, but most of them focus on sophomores and juniors, which has brought great trouble to the interaction between teachers and students in the classroom and scattered the teachers' teaching energy.

2 Construction of interactive mode of College English mobile teaching in big data environment

With the impact of information technology and digital technology on people's lives, information explosion has accumulated to the extent of triggering change. The era of big data has brought opportunities to education and challenged the traditional classroom education mode. The development of campus digitalization, teaching digitalization and English education informatization shows the close relationship between English teaching and the application of educational technology, and the interaction and continuous integration between the renewal of educational concepts and the development of educational technology. The interaction between teachers and students is an important factor in effective teaching, and it is a necessary way to cultivate students' standardized language communicative ability and achieve the goal of classroom teaching [7]. The new teaching mode calls for a new relationship between teachers and students. In the era of big data, teachers need to change their ideas, strengthen interaction, communication and cooperation with students, share experience and knowledge with students, and create a democratic and harmonious learning atmosphere. Flipped classroom is a transformative teaching mode based on modern information technology. The classroom is no longer the only learning place for learners, but has become the main front for students' autonomous learning, classroom activities after acquiring knowledge, teacher-student interaction and knowledge internalization. In the flipped classroom in the era of big data, teachers should become the guides of students' autonomous learning; We

should be good at evaluating and encouraging students from different levels and from the perspective of appreciation. Flipped classroom allows teachers to experience the splendor of the classroom and the growth of students from a new perspective. The digital and information-based teaching mode advocates the autonomous learning of teaching objects and requires teaching objects to become active internalizers and builders of knowledge. In the process of implementing flipped classroom teaching, teachers and students will face more or less challenges due to the change of teaching mode. To build a benign interaction between teachers and students, efforts should be made from the teaching platform, teaching resources, teacher-student relationship and other aspects.

2.1 Definition of flipped classroom

Flipped classroom, as a new teaching mode, has changed the traditional teaching process. Generally, students watch the teaching video created by the teacher independently first, and then have face-to-face discussion and communication with the teacher [8]. Flipped classroom reverses the order of knowledge internalization and knowledge transfer. Students watch teaching videos before class, so that they can leave more time for in-depth research on difficult and key issues with teachers. Flipped classroom can increase the opportunities of interaction between teachers and students, and create an autonomous learning environment for students. The teacher will record the teaching content into a video, so that students can check for omissions and fill vacancies at any time, while the teacher can focus on discussing what students do not understand, making students' learning more personalized. Flipped classroom has reformed the traditional teaching process. Teachers who want to control this new teaching mode must not only have the ability to record and edit teaching videos and other information technology, but also fully understand the idea and sequence of this teaching mode.

2.2 The advantages of flipped classroom mode over traditional mode

Under the traditional English teaching mode, teachers complete the knowledge transfer through face-to-face teaching and discussion to students. This process is actually a process in which students passively accept knowledge, and then students promote the internalization of knowledge by independently completing after-school exercises or practical activities. The flipped classroom mode emphasizes students' autonomy at all teaching stages. Students can initially understand the key and difficult points of this class by watching the teaching video recorded by the teacher in advance, so that they can communicate and discuss with the teacher more pertinently. The process of discussing with the teacher or fellow students is actually the process of knowledge internalization. Under the flipped topic mode, knowledge internalization is completed in the classroom, which is conducive to teachers' timely understanding of students' mastery of knowledge, and then solve the problems that perplex students in class, which can greatly improve the learning effect of students. Compared with the traditional teaching mode, the advantages of flipped classroom mode also include that students can master their own rhythm in English learning according to their actual situation. In the flipped classroom mode, the initial learning of new knowledge is realized through teaching

videos. Students can fast forward, pause, watch repeatedly, etc. according to their understanding. If they don't understand, they can also seek help from classmates and teachers through We-chat. In general, students' learning is more autonomous. Compared with the traditional teaching mode, flipped classroom mode can increase the interaction between teachers and students and peers. In the flipped classroom mode, teachers participate in students' learning as instructors and learning promoters, which is more convenient for the harmonious communication between teachers and students. From the perspective of teachers, teachers can observe and understand the interaction between students in an all-round way. Teachers can also give students more targeted guidance and help. Teachers can also help them establish interactive teams according to the situation of different students, so as to improve the teaching effect. From the perspective of students, students can obtain more diverse learning resources and deal with them, so as to facilitate their learning of English knowledge. Since the teaching content in the classroom has been transferred to the stage of autonomous learning before class, students can discuss the confusion with their peers or teachers in the classroom. On the basis of peer discussion, the teacher can give timely guidance, which is conducive to deepening students' understanding of knowledge.

2.3 Design of flipped classroom

40 students were selected from Shenyang Normal University, who have completed the teaching task for 16 weeks. According to the situation of College English Teaching in the previous academic year, the teachers used the flipped classroom mode to teach the 16 weeks. In class, students are divided into 4 groups. In different task activities, students form 4 groups to establish a class. Teachers distribute videos and related materials in the group to facilitate the participation of team members. This is helpful for teachers to carry out teaching rectification, and it is also convenient for students to discuss. The specific flipped classroom design process is shown in Figure 1.

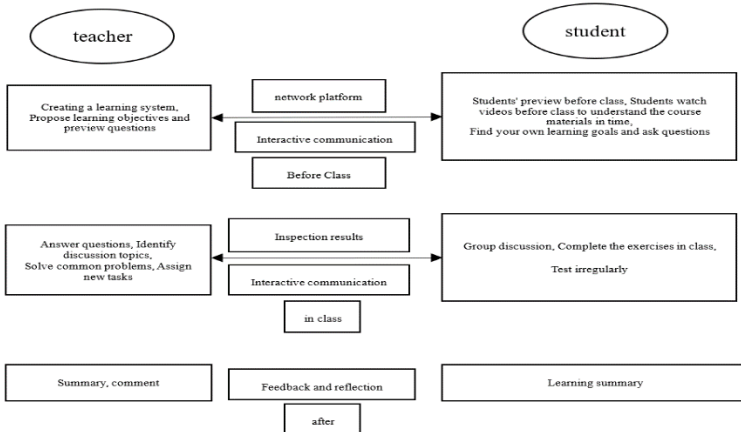


Fig. 1. flipped classroom teaching design process

2.4 Application effect of flipped classroom

During the teaching process, each group should preview the knowledge within the specified time, and the teacher should observe the preview of students in the background and record it. In class, the teacher should explain the effect of preview, and the students should focus on asking questions and discussing according to the problems they did not understand during preview. After class, the teacher formulates homework according to the reaction of students in class and the discussion between students, and tests the class effect within a week [9].

The effect analysis is as follows: (1) The video preview before class can help students understand the significance of the teaching content and the required effect, so that students can have a more systematic thinking construction. (2) The interaction with teachers in class has increased, and the opportunities to communicate in English have also increased. (3) Students' efficiency of solving problems in the process of discussion is improved, and the role of mutual supervision is obvious. (4) Each member of the cooperative group has made different contributions to the group learning, which multiplies the students' sense of achievement and helps to build students' self-confidence in English learning. (5) The effect of students' review after class is obvious.

3 Conclusion

In this paper, the traditional way of College English education is limited to a certain extent. However, under the background of big data, the education mode is gradually becoming open, the thoughts of students and teachers are changing, and the education mode is also enriched. Through the teaching case analysis of flipped classroom under the background of big data, it can be seen that English mobile teaching effectively improves students' interest in English teaching, enhances the interactivity of the classroom, and improves students' autonomous learning ability.

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