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Interactive Mode of Mobile Teaching in College English Teaching in the Era of Big Data

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ABSTRACT. The basic education reform supported by mobile terminals not only enriches the teaching resources, changes the traditional teaching mode, but also changes the communication and interaction between teachers and students. The purpose of this paper is to study the interactive mode of College English teaching based on the background of big data era. This paper analyzes the video data of the interaction between teachers and students in the cloud classroom of A university English mobile terminal. The experimental results show that in listening class, teachers tend to open-ended questions (6.21%), encourage students to develop their own thinking on the basis of existing cognition, and students' responses are mainly positive responses (10.14%), Based on this, students can also actively ask questions (1.06%) to teachers for their own questions and unique opinions in the process of in-depth thinking. In the mobile terminal cloud listening class, students' subjective initiative has been given more play, showing stronger initiative and uncontrollability in the class, which requires teachers' full guidance.

KEYWORDS: Big data age, English teaching, Mobile teaching, Interactive mode

1. Introduction

The interaction between teachers and students is a kind of communication process of specific education with teachers as the main body to students. In a sense, the interaction between teachers and students can be regarded as a process of mutual communication. The ways are diversified, which can be interacted through speech, expression, posture, gesture, the content is mainly knowledge, skills, emotion and moral education, the effect is to have a positive or negative impact on students' knowledge, skills, emotion, morality, etc. The interaction between teachers and students is through the exchange of information and body language to achieve the mutual influence between teachers and students, and to achieve the psychological and behavioral changes between teachers and students; or it refers to the process of classroom teaching mode in Colleges and universities, so that students can integrate into the teaching mode of Teachers, and make the two achieve a balanced state, so as to achieve the purpose of mutual promotion and improve teaching efficiency. The interaction between teachers and students has a great influence on college education. The good interaction between teachers and students has changed the traditional indoctrination teaching mode because of its advanced concept and connotation, and has aroused the enthusiasm of teachers and students to the maximum extent.

2. Literature Review

So far, a large number of new technologies and new means have been researched and developed with the high development of information technology [1]. The emergence of these new technologies and new means is constantly impacting our traditional classroom teaching mode [2]. The high development of mobile learning platform based on the Internet is constantly promoted [3]. The interaction between teachers and students is also advancing with the times. In particular, the development of mobile terminal equipment is an important improvement for teaching activities in Colleges and universities [4-5]. Mobile learning is a new learning mode under the background of the rapid development of network information technology and the massive use of mobile terminals. Compared with the traditional classroom learning mode, the biggest advantage of mobile learning mode is that learners are no longer limited by time or space. The introduction of mobile learning platform makes the interaction between the two sides more direct and efficient, and the interaction mode is also simplified [6-7].

Wang J established the WeChat official account (OA) instant interactive platform. In two semesters, OA sent 73 push notifications. Through the mobile social media wechat OA anytime and anywhere notification and interactive feedback, promote the student-centered teaching mode [8]. So Simon evaluated the application of mobile instant messaging tools in higher education teaching. 61 college students with smartphones WhatsApp were assigned to the

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experimental group and the control group. Taking pre exam scores as covariates, WhatsApp's intervention improved participants' academic performance [9]. The AR design concept used by Turkan Y helped students to participate constructively and retain information by providing interactive and three-dimensional visualization functions, thus helping students to learn [10].

In this paper, a university is selected as the research object to study the interactive mode of English Teaching in the cloud classroom environment based on mobile terminal in the experimental class. The analysis coding system is used to objectively, systematically and quantitatively describe the actual content of the lesson and analyze the coding results. Through data analysis, this paper deeply analyzes the advantages of interactive mode of mobile teaching in college English teaching, reveals the current situation of the problem, and provides reference for promotion and improvement.

3. Research Method

Based on the frequent itemset mining algorithm of compressed matrix, the transaction data is transformed into the form of compressed two-dimensional Boolean matrix. First of all, compress the transaction data, keep only one of the same transaction data, and increase the weight array AE to store the number of transactions. Secondly, the compressed transaction data is transformed into a two-dimensional Boolean matrix according to the following definitions:

$$\text{Support\_count}(I_i) = \sum_{j=1}^{n} m_{ji} * AE_j \quad (1)$$

Based on the frequent itemset mining algorithm of compressed matrix, the calculation formula of support count of k-itemset in the transformed Boolean matrix D is shown in formula 2, which is the value of the corresponding column vector CL of itemset and the resulting column vector CLK multiplied by the weight array AE.

$$\text{Support\_count}(I_i I_j) = (CL_i \wedge CL_j)*AE \quad (2)$$

4. Experiment

Through observation and judgment, the behavior of a university teachers and students in this sample is given corresponding coding symbols and recorded in the coding statistical table. Finally, according to the coding processing rules, the coding analysis matrix is formed to calculate the proportion of each behavior in the total classroom behavior.

In this study, the data of teacher and students' teaching interaction behavior mainly comes from classroom observation records and video analysis of classroom actual records, as well as communication feedback with teachers and students after class and collection of platform record data. At the early stage of implementation, Chen reached a consensus with the experimental class to carry out the practice, and agreed with the teacher in advance as a sample of the classroom video. The specific information of the case class selected in this study is shown in Table 1:

Table 1 Information Statistics Of Case Class

Subject	Instructor	Lesson type	Collection method	Number of codes	Sequence logarithm
English	Miss Chen	Listening	Video recording 42 minutes 45 seconds	835	834
		writing	Video recording 42 minutes 45 seconds	895	894

5. Discussion

5.1 Analysis of Speech Behavior Interaction between Teachers and Students in Cloud Classroom of Mobile Terminal

The proportion of speech act interaction between teachers and students in writing class is 80.23%, and that in listening class is 68.21%. Among them, the speech act interaction of teachers in writing class is 12.02% higher than that in listening class, especially the speech act of teachers is 15% higher than that in listening class, while the speech act of students is 10.26% lower than that in listening class. It can be seen from the data that writing is mainly composed of teacher's speaking and student's listening, while in listening class, teachers will more guide students to speak and express their ideas, so as to participate in the teaching process more.

About teachers and students' questions and answers: in writing class, teachers have more closed questions (5.20%), leading students to think and answer in the direction of given teaching design and teaching content, and students'

answers are mainly passive responses (7.50%); in listening class, teachers tend to open questions (6.21%), encouraging students to develop their scattered thinking on the basis of existing cognition, Students' responses are mainly positive responses (10.14%). Accordingly, students can also actively ask teachers questions (1.06%) based on their own questions and unique opinions in the process of in-depth thinking, while students in writing class almost have no active questioning behaviors as shown in Figure 1.

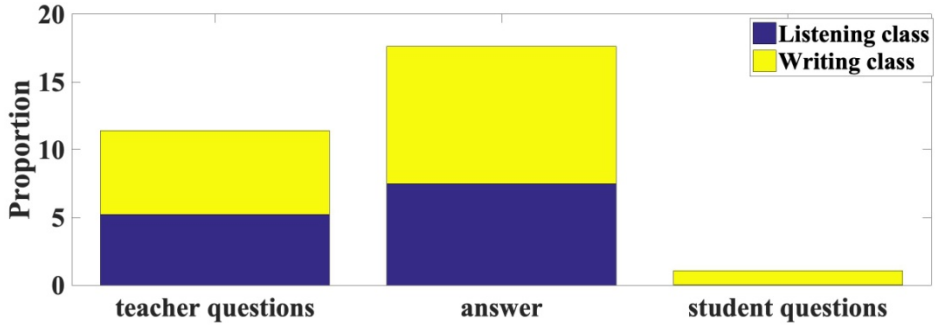

Fig.1 Interactive Mode of Question and Answer between Teachers and Students

About communication and evaluation feedback behavior: there is no obvious difference between the two types of classes on the part of teachers, but on the part of students, the communication, discussion and evaluation feedback behavior of students in listening class accounts for 2.02% and 1.72% of the total behavior, which are two times and four times of that in writing class as shown in Table 2.

Table 2 Student Communication And Evaluation Feedback

Lesson type	Exchange and discussion	Evaluation feedback
Listening	2.02%	1.72%
Writing	0.89%	0.38%

5.2 Interaction Analysis of Technology Application Behavior between Teachers and Students in Cloud Classroom of Mobile Terminal

33.30% of teachers and students in the listening class and 28.20% in the writing class, slightly lower than that in the listening class. Among them, the proportion of students' operating skills in the two types of class is similar, while the proportion of teachers is 9.85% in writing class and 16.05% in listening class. It shows that the difference between the two types of courses has a greater impact on Teachers' technical behavior than on students. In different classes, the differences of teachers and students' technical application behavior are mainly reflected in the following aspects:

About resource presentation behavior: the technical operation behavior of teachers in listening class is about 1.5 times of that in writing class, because teachers in writing class need to give detailed instruction to the teaching content, while listening class is mainly to guide students' in-depth cognitive processing, without too much instruction, rich resource presentation is conducive to broaden students' thinking boundary.

Task arrangement and practice behavior: the proportion of teachers' task arrangement and students' task practice in writing class is 2.09% and 9.30% respectively, while that in listening class is 3.45% and 5.21% respectively, as shown in Figure 2. In the writing class, the students' cognition of the teaching content is relatively simple, and they need more time to explore and Practice for a task; in the listening class, the students' task is completed faster, and the teachers assign more different types of tasks to help students realize the internalization of knowledge.

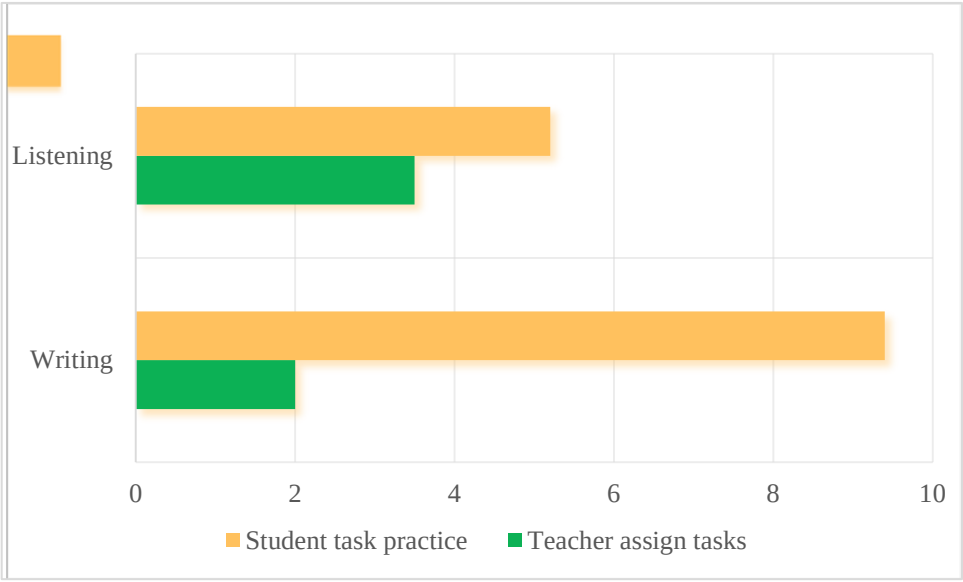

Fig.2 Task Arrangement and Practice Interaction Mode

About communication and evaluation behavior: in writing class and listening class, teachers' evaluation behavior through technology accounts for 2.20% and 5.03% of their total classroom behavior respectively, and students' evaluation behavior accounts for 0 and 0.46% respectively, which shows that teachers and students are better at using technology to realize evaluation activities in listening class. Technology-based students' cooperative communication behavior accounts for 1.99% of listening class, which is also far higher than writing class.

5.3 Silence Behavior

In the classroom, students need to think, internalize and absorb knowledge, so teaching pause is essential. From this comparative analysis, it can be seen that the proportion of teaching silence or confusion in listening class is much higher than that in writing class, but according to the classroom records and video recordings, it is mainly due to the objective reason of temporary network technology failure, which is not closely related to the class type. But it also reflects the fact that in listening class, students are given more opportunities to play their autonomy, which requires teachers' real-time supervision and guidance, otherwise it is easy to cause classroom confusion.

In College English class of listening, students have a preliminary understanding of the teaching content. In the class, the teacher focuses on guidance, encourages students to think critically actively and form their own unique opinions, which is the “constructive processing” of knowledge. In the writing class, students have a preliminary understanding of the teaching content. In the class, the teacher mainly transmits knowledge through teaching, and the students mostly do passive acceptance, lacking their own in-depth thinking, It is which “receptive processing” of knowledge. It can be seen that in the listening class, students' subjective initiative has been given more play, showing stronger initiative and uncontrollability in the classroom, which needs teachers' full guidance.

6. Conclusion

This research is based on the strategic project of College English education, with the teaching application of a university mobile terminal as the research object and the teaching interaction supported by the cloud classroom of mobile terminal as the starting point. Based on the combination of theory and practice, this paper constructs a coding system of teaching interaction analysis based on mobile terminal, makes coding statistics on the interaction between teachers and students, makes comparative analysis on the interaction between teachers and students from the perspective of class type, and makes reference analysis on the existing quantitative standards of teaching behavior. In order to provide methodological guidance for the design of teachers' decision-making and interaction activities in the digital environment supported by mobile terminals, so as to improve the efficiency of teaching interaction and optimize learning.

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