



Research on Teaching Mode of College English Ecological Education with Big Data Informatization

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Abstract. In the information age, the impact of big data application on English teaching is gradually increasing, and the traditional education ecosystem has changed. In this case, how to use big data technology to improve the ecological environment of English education and promote the development of College English education and teaching in China has become a problem that must be concerned. Referring to the relevant theories of educational ecology, this paper studies the construction of ecological teaching mode of College English under the background of big data, hoping to provide reference for the improvement of College English teaching environment and the development of English education and teaching.

Keywords: Big data · College English · Ecological education · Teaching mode

1 Introduction

As a new generation of information technology, cloud computing has penetrated into all aspects of production and life in just a few years from the concept proposed to the rapid application and popularization, changing people's traditional life and thinking mode. The so-called cloud computing is simply a super computing service mode based on virtualization technology, network as the carrier, users as the main body, and providing infrastructure, platform, software and other services as the form to integrate large-scale and scalable distributed computing resources such as computing, storage, data, application to work together [1]. On the whole, the application of cloud computing technology in English Teaching in China is still in its infancy, and there is still a long way to go in theoretical exploration and practice. However, the important application value of cloud computing technology in English teaching is gradually highlighted with its advantages of openness, convenience and sharing.

2 The Application Value of Cloud Computing Technology in English Teaching

The application of cloud computing in English teaching will bring about a revolution in English teaching. Its advanced technology, advanced resources, sharing and flexibility

will restructure English teaching methods and learning methods to achieve the comprehensive integration of English teaching resources and promote the overall improvement of English teaching quality and learning effect. First, the advanced whenever technology is applied. Cloud computing breaks the limitation of English teaching through technology. It makes English teaching completely meet the requirement of teaching in the space. The English teaching is no longer restricted by the school and classroom. Teachers and students can interact online and offline whenever and wherever possible. Teaching will be truly student-centered, with sufficient teaching resources and flexible teaching methods, teachers will have more time to spend on students, teachers can make personalized teaching programs according to the characteristics and needs of students. Secondly, the resource sharing of the whole school will be greatly improved through the resource sharing of the whole school. The application of cloud computing technology in English teaching can not only break the limitation of time and space, but also develop a variety of more flexible learning tools. For example, the construction of cloud classroom and cloud database, students can flexibly access English learning resources through computers, mobile phones, tablets and other media, as well as installing a variety of applications. While English teaching resources are very rich, students can obtain the same massive resources as teachers to a certain extent [2]. Teachers can easily manage students' learning process and set learning objectives according to their own characteristics and needs. With the help of teachers, they can formulate reasonable and efficient learning plans. Through targeted and targeted learning and training, English learning will become more efficient, More emphasis on interest and application.

3 Application of cloud computing in English Education

Cloud computing is the extension of the Internet, with the network, personalized, low-cost, high-performance and other functional characteristics, the promotion and application of cloud computing technology makes the characteristics of Internet resource sharing play more incisively and vividly, and rapidly expand to various industries and fields with the fastest speed. The application of cloud computing technology in the field of English education mainly focuses on theoretical exploration. Constructivism theory, cooperative learning theory, second language acquisition theory and other language learning theories are the theoretical support for the application of cloud computing technology in English teaching. Constructivism emphasizes that language learning is not a passive absorption of knowledge, but a process in which learners actively construct their own knowledge system. The construction of knowledge system depends on the guidance of teachers, the interaction between learners and the environment, and the interaction between individuals and others, so that learners can establish appropriate connection between the old knowledge and the new knowledge, and integrate the old and new knowledge, so as to develop the knowledge system. The construction of cloud computing English education platform enables learners to interact with language learning environment anytime, anywhere, and gradually improve their knowledge system in the flexible detection of old and new knowledge. Collaborative learning theory attaches importance to collaborative learning among groups or team members through competition, cooperation, interaction

and other ways to achieve their common goals. Cloud computing platform provides a variety of interactive platforms and learning communities to achieve a wide range of interaction between learners from different regions, among which anonymous communication can help learners overcome various psychological barriers and achieve free and equal communication with teachers and learners. Although the specific theoretical interpretations of universal grammar theory, monitoring theory and environment theory are different, they all emphasize the importance of language learning environment and emotional factors to language learners. Through the establishment of a standard English language environment and its relaxed online and offline interaction, English cloud platform will play a positive role in promoting language learners' second language acquisition. The practice of cloud computing technology in English education is still in the exploratory stage [3]. English teaching researchers have made a preliminary exploration on the application of cloud computing in College English, business English and other specific English courses. The application of cloud computing technology in English teaching has changed the original English teaching concept. New teaching concepts based on cloud computing, such as English ubiquitous learning mode, personalized teaching, spatial teaching mode and mobile learning, have emerged as the times require. At the practical level, there are also cloud computing technology software such as juku correction network and Moodle cloud platform, which provide more convenience for English teaching and learning. Universities, scientific research institutions and computer enterprises have gradually carried out school enterprise cooperative development to promote the practical application of cloud computing in English teaching. The application of cloud computing in English teaching conforms to the law of English learning, and will play a positive role in the improvement of English teaching methods and learning effect. However, the application of cloud computing in English teaching is still in its infancy. At present, there are still some problems, such as the lack of compound talents in English and cloud computing technology, and the development of English teaching resources based on cloud computing.

4 Fuzzy algorithm in English Teaching

Classroom teaching quality evaluation belongs to the category of fuzzy evaluation, because different people may have different or even completely opposite evaluation results on the same class teaching activities, and the appearance of these evaluation results is not purely random. "On the contrary, it appears similar fuzzy and has no rules to seek. For this kind of evaluation which is mixed with personal subjective consciousness, it is not appropriate to use the traditional one-time quantitative or weighted average method of 21. Therefore, this paper puts forward a fuzzy evaluation model of classroom teaching quality to realize the teaching quality evaluation and improve the scientificity of classroom teaching quality evaluation. Classroom teaching quality evaluation uses the fuzzy algorithm in fuzzy mathematics [4]. Fuzzy algorithm is a valuable method for the evaluation problem which is difficult to quantify directly with accurate numbers. This method is to use a series of mathematical processing to make the factors with fuzzy and non quantitative characteristics have a certain form of quantitative expression, so as to provide a basis for comparison and discrimination of decision-making, and improve the scientificity and correctness of decision-making.

Given three sets: ① evaluation factor set

$$U = \{u_1, u_2, \dots, u_m\} \tag{1}$$

② A collection of comments

$$V = \{v_1, v_2, \dots, v_n\} \tag{2}$$

③ Weighted fuzzy subset

$$A = \{a_1, a_2, \dots, a_m\} \tag{3}$$

and $\sum_{i=1}^M a_i = 1$, the weight of the i-th factor is shown.

Constructing membership fuzzy subsets R_i ,

$$R_i = \{r_{i1}, r_{i2}, \dots, r_{in}\} \tag{4}$$

An $M \times n$ fuzzy evaluation matrix R is constructed in $U \times V$ domain,

$$R = \begin{Bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \vdots & \vdots & \dots & \vdots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{Bmatrix} \tag{5}$$

Calculation of fuzzy comprehensive evaluation value

$$S = A \bullet R = (a_1, a_2 \dots a_m) = \begin{Bmatrix} r_{11} & r_{12} & \dots & r_{1n} \\ r_{21} & r_{22} & \dots & r_{2n} \\ \vdots & \vdots & \dots & \vdots \\ r_{m1} & r_{m2} & \dots & r_{mn} \end{Bmatrix} \tag{6}$$

In the application of fuzzy algorithm, the key is to determine the membership degree, which reflects the position of the i-th evaluation in the comprehensive evaluation. The multi-level index system is commonly used in the teaching evaluation of teachers. According to the weight of all levels of indicators, the comprehensive evaluation S .

5 Suggestions on Promoting the Application of Cloud Computing in English Teaching

5.1 Creating a Team of Compound Teachers

For non computer major English subject managers and teachers, cloud computing belongs to interdisciplinary technology, and its software and hardware environment construction and application deployment are highly professional. As the demand and user of platform and application, English education practitioners do not have to understand

its underlying technical architecture from a deep level, we should be familiar with and apply the basic principles of business. Only in this way can the demander participate in the whole process of platform requirement analysis, implementation and deployment, testing and tuning to business application [5]. English education practitioners can define the cloud computing application standards of this discipline together with cloud computing technicians, so as to ensure that the cloud platform is demand-oriented from the development stage, and make the platform and application based on cloud computing meet English teaching the characteristics of learning meet the requirements of English teaching. It can be seen that the key to promote the application of cloud computing technology in English is to cultivate a team of interdisciplinary teachers. To promote the application of cloud computing in English teaching, the construction of teachers' team is the fundamental element. To cultivate a compound teaching team of English subject and cloud computing technology, efforts should be made in three aspects: - to strengthen professional knowledge training, and to strengthen the understanding of the basic knowledge and concept of cloud computing by means of centralized organization and self-study [6–8]. The second is to actively participate in the project construction of cloud computing in the field of English education, practitioners must actively participate in it, so that the project results can meet the actual needs of English teaching, and practitioners can greatly improve the knowledge level of cloud computing. Third, to strengthen the practical application of English education, practitioners should not only understand and support the application of cloud computing technology from the concept, but also strengthen the practice and application level in the actual teaching work, and constantly put forward higher requirements and standards according to the actual teaching, so as to promote the mutual promotion and common development of teaching and technology (see Fig. 1).

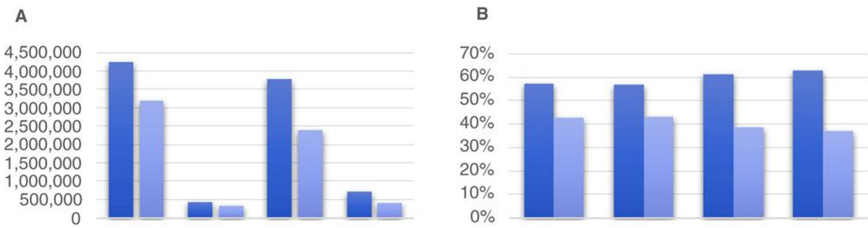


Fig. 1. Teaching and technology for students

5.2 Construction of Space Teaching Mode with Students as the Main Body

Through the construction of resource pool and cloud classroom, cloud computing breaks the space-time limitation of teaching from the technical level. Students can obtain the best learning resources anytime and anywhere, and the mode of teaching and learning will change fundamentally. Students can participate in the classroom learning of well-known schools at home and abroad in real time through computers, mobile phones, tablets and other media at home. In the future, they may interact with teachers and

students in the classroom through virtual reality technology; Students can arrange and control their study time more freely. They don't have to worry about missing a certain course or lecture. They can learn the audio and video content of yesterday or even a few years ago through the resource pool. They can also leave messages and interact with teachers for certain knowledge points and doubts. The teaching mode of English has also changed. It is only a link in the process of English teaching to maximize the use of students' learning time and truly make the teaching take students as the main body. In English teaching, the space teaching mode should recommend and share the resources in the teaching resource pool to students according to the characteristics of the students [5, 6, 9]. In the cloud classroom, homework should be arranged, interactive communication and evaluation should be carried out to guide students to carry out self-learning after class, anytime, anywhere and pertinently(see Fig. 2).

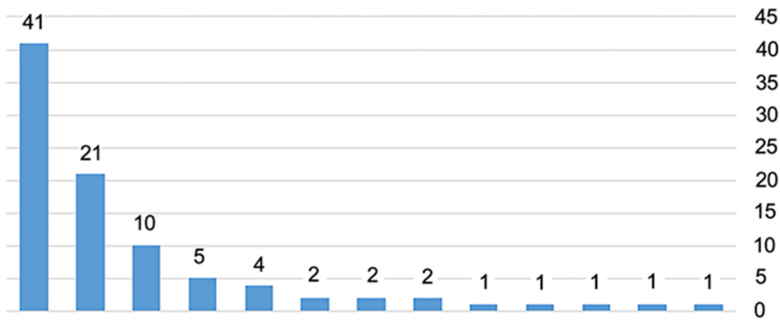


Fig. 2. Simulation for space teaching mode

6 An Overview of Ecolinguistics

6.1 Main Overview

In recent decades, it has developed into a discipline to study the interaction between language and its living environment. There are two most famous models in the circle of ecological Linguistics: the Haogen model (dangerous metaphor) and the Halliday model (non dangerous metaphor). In fact, it is linguists and anthropologists such as Walgreen who first put forward the term of ecological linguistics, not Haogen or Halliday. But these two models are the most well-known in ecolinguistics, representing two research approaches. In the 1970s, Professor Hogan of Stanford University proposed the concept of eco linguistics. He believed that eco linguistics studies the interaction between any specific language and environment, and compares the relationship between language and environment to that between animals, plants and natural environment. Halliday's model emphasizes the influence of language on the living environment of human beings and believes that the language used by human beings will have a direct impact on the ecology of human society. From the perspective of eco linguistics, College English teaching mainly studies the process of the interaction between various ecological factors in teaching, including teachers, learners, teaching environment and teaching methods.

6.2 Domestic Main Research

In recent years, there are many and novel researches on Eco linguistics in China, such as the rise and development of Huang Guowen's eco linguistics, He Wei's eco discourse analysis model construction, Hu Gengshen's "applied translation studies from several eco translational perspectives", etc. There are also many researches on College English teaching from the perspective of eco linguistics, such as song Tiehua's exploration of ecological College English classroom teaching in local colleges, Wang Yanping's reform of College English under the guidance of eco linguistics, etc. However, these studies mainly focus on the level of College English Teaching in universities. Relatively speaking, there are few studies on College English Teaching in Independent Colleges from the perspective of eco linguistics. Over the years, the state has vigorously supported the development of independent colleges, requiring local independent colleges to adapt to local conditions and develop their own characteristics [6, 7, 10]. College English Teaching in independent colleges is also an important part of higher education. Therefore, analyzing and solving the problems existing in College English Teaching in Independent Colleges from the perspective of eco linguistics will help to improve the teaching efficiency of teachers and the learning efficiency of students, and promote the sustainable development of College English teaching.

7 Problems in College English Teaching in Independent Colleges from the perspective of Eco Linguistics

7.1 Teachers are Lack of Quality

College English teaching from the perspective of eco linguistics is a micro ecosystem, which includes many ecological factors, the most important of which are teachers and students. Relatively speaking, due to the short running time of independent colleges, the main body of teachers is young postgraduates and lecturers. Among the five independent colleges in Gansu Province, 67% are lecturers in Longqiao xuexiao Foreign Language Department of Lanzhou University of Finance and economics, 83.3% are lecturers in Changqing College of Lanzhou University of Finance and economics, 72.5% are lecturers in Bowen xuexiao Foreign Language Department of Lanzhou Jiaotong University, and 70% are teachers with sub senior titles or below in Zhixing College of Northwest Normal University, There are 7 teachers in the school of foreign languages, School of technology and engineering, Lanzhou University of technology with the title of deputy senior or above. Most public institutions of higher learning mainly have the title of associate professor or above, or the proportion of associate professor or above is larger than that of independent colleges, such as Lanzhou University in Gansu Province, Northwest Normal University, Lanzhou University of science and technology, Lanzhou University of Finance and economics, Lanzhou University of Arts and Sciences, etc. Therefore, the independent college teachers are lack of professional quality compared with the first two universities [11, 12]. In the College English Teaching of Longqiao College of Lanzhou University of Finance and economics, some teachers, due to the lack of professional quality, are limited to the text itself, unable to effectively explain the culture, politics, history and other aspects involved in the text, so as to expand students' knowledge.

7.2 Imbalance of Teaching Environment

A good teaching environment is the basis of creating a good atmosphere for College English learning. First of all, the financial funds of independent colleges are mainly raised by social organizations and individuals. Compared with the public colleges, the teaching funds are relatively insufficient, which leads to the loss of teaching environment for students to read. Even some of them are relatively old and cannot meet the needs of students. Independent college teaching equipment is relatively lacking and old, College English learning is inseparable from multimedia equipment, especially listening learning. Some colleges and universities equipped with listening multimedia resources sometimes have problems in the process of class, and even the phenomenon of listening equipment in short supply, these problems need teachers to spend a certain amount of time to deal with, delay the progress of teaching. The teacher resources of independent colleges are also out of balance. Most of the teachers have large class hours, and there are many classes and classes, which cannot create a good teaching environment. Secondly, independent colleges belong to private colleges, so the competition pressure is relatively large. In order to enhance competitiveness, independent colleges focus on the completion of various indicators, such as CET-4 and CET-6 indicators [9]. The selected college English textbooks are close to the content of CET-4, and tend to be scientific and technological articles. As shown in Fig. 3. The content is relatively boring, teaching is full of pressure and obstacles, and cannot provide students with a relaxed and interesting teaching environment.

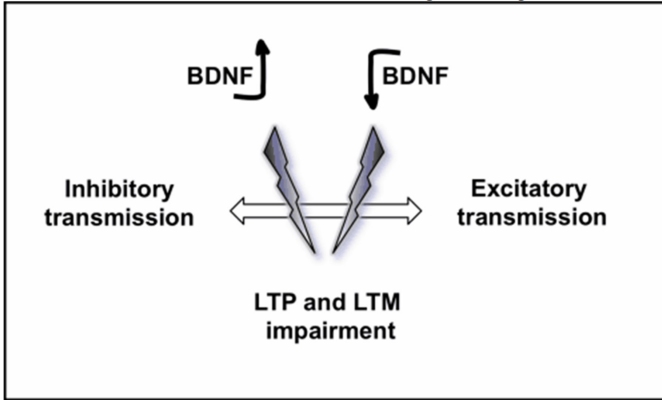


Fig. 3. Imbalance of teaching environment

8 Conclusions

The application of cloud computing in the field of education has very important value and significance, and will also provide strong support for the development of education. The application value of cloud computing in English discipline is also highlighted. At present, the construction and application of cloud computing are still in its infancy.

English educators should improve their understanding, actively strengthen their study and research, and accelerate the promotion of practice and application. Combined with the characteristics of cloud computing technology and the characteristics of English discipline, further deepen the application of cloud computing, so as to continuously improve the level of English teaching.

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