Exploration of Corpus Based English Listening and Speaking Teaching Mode Reform under Big Data

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Abstract. *with the Continuous Development of Computer and Internet Technology, the Use of Corpus for Teaching Has Been the Trend of Modern Teaching. English Teaching is a Major Foreign Language for Our Students. English is Also Used as an International Common Language. as a Modern Person, English Must Be Mastered. Therefore, a Corpus Based Teaching Mode Reform of Listening and Speaking is Proposed. But the Traditional English Training Mode Has Been Unable to Meet the Current Teaching Needs. Today, with the Increasingly Rich Corpus, Particle Swarm Optimization is Applied to the Corpus Based College English Teaching Mode. the Result Shows That the Method is Very Practical.*

Keywords: Corpus, English Teaching, Particle Swarm Optimization Algorithm

1. Introduction

Since the New Century, with the Continuous Development and Improvement of the Electronic Information Technology, the Network Has Become the Mainstream Media and Tool (Juan d U et al 2016)[1]. the Network Has Its Unique Advantages, and Has the Great Advantage of the Traditional Media in Terms of Interaction, Openness and Real-Time. Combining Network with Education Can Create a Better Condition for Students' Autonomous Learning. Creating a Better Condition is a Very Convenient Teaching Method (Zhao J et al 2016)[2]. Teachers Can Obtain Information Related to English Teaching on the Platform of the Corpus, and Then Teach Students Anytime and Anywhere on the Internet. At Present, a Few Colleges and Universities Have Begun to Use Corpus to Carry out Special Training for Students. Because of the Openness of the Corpus, Students Can Find a Suitable Training Method through the Platform of the Corpus (Gawi e et al 2015)[3]. Most Colleges and Universities in China Have Not Been Able to Pay More Attention to Students' Self-Learning Ability, Because the Use of Corpus in the Teaching Process of English Requires Students to Have Independent Learning Ability (Hai-Yan et al 2015)[4]. in College, the School is Not Binding on the Students, the Students' Learning Time is More Flexible. If the Students Do Not Have Independent Learning Ability, It Will Lead to the Lack of Corresponding Results Even with the Perfect

Network English Training Platform (Yan-Lin et al 2015) [5].

2. State of the Art

In Addition, under the Traditional English Teaching Model for Many Years, Most of the English Teachers Are Still Teaching English According to the Traditional Teaching Mode, Which is Also a Great Obstacle to the English Teaching of Corpus. Therefore, Teachers Are Also the Key Factors in English Teaching Reform (Xie et al 2017) [6]. Particle Swarm Optimization (Pso) is a Kind of Natural Random Search Algorithm Based on a Group Collaboration Based on Simulated Bird Foraging Behavior. It is an Algorithm That Belongs to Cluster Only (he f et al 2016) [7]. All Birds in the Bird Group Know the Specific Information of the Food in a Random Area When a Bird Finds a Food Search in a Random Area. after the Observation of the Natural Phenomenon, There is a Doubt about the Foraging Behavior of Birds (Kou X y et al 2017) [8]. Based on the Natural Phenomenon, the Problems in the Model Are Reasonably Optimized. Using Pso to Represent a Bird in Space Search for Optimization Problems is Called "Particle"(Liu h et al 2016) [9]. These Particles Are Calculated by an Adaptive Function of Optimization Function. in the Algorithm, the Speed of Each Particle Determines Their Flight Distance and Direction. These Particles Are Then Able to Search for the Optimal Particle for Joint Search in the Solution Space. in Order to Be Able to Analyze Quickly, the Artificial Neural Network Algorithm Will Be Used to Construct a Simple Mathematical Model for the Whole Algorithm. the Algorithm is Trained by the Way of Backpropagation, So That the Particle Swarm Optimization Algorithm Can Iterate According to the Actual Situation, and Improve the Adaptability of the Algorithm, So That Can Keep the Best Algorithm Performance in All Kinds of Environment (Li X et al 2016) [10].

3. Methodology

3.1 The Application of Corpus in College English Classroom

Traditional English teaching methods can no longer satisfy the current teaching needs. Under such circumstances, the teaching method needs to be improved on the basis of the original. The corpus is to integrate the existing information and express it in the form of a database through digital information, storing it in various media, then spreading it on the basis of the Internet. In the course of students' teaching, to make a scientific and rational setting of the length of the algorithm particles is necessary, so that there is a guarantee of speed in the process of iteration and optimization. These corpora contain various forms of knowledge, information and educational information. Therefore, when corpora are used, these corpora need to be data mining. In the process of data mining, the objectives need to be determined and the following objectives are set:

$$W_K = TF_K * IDF_K \tag{1}$$

W_K is the word weighting factor, and TF_K is the number of times that the text appears in the text. The method can quickly find the information suitable for English Teaching in the corpus, and optimize the search method of the target, so that it can eliminate the interference factors in the information. The classification of these corpora will enable teachers and students to better select learning materials in the process of English teaching. By integrating these data, a good English learning environment can be constructed. The basic principles of data mining are shown in Figure 1 below:
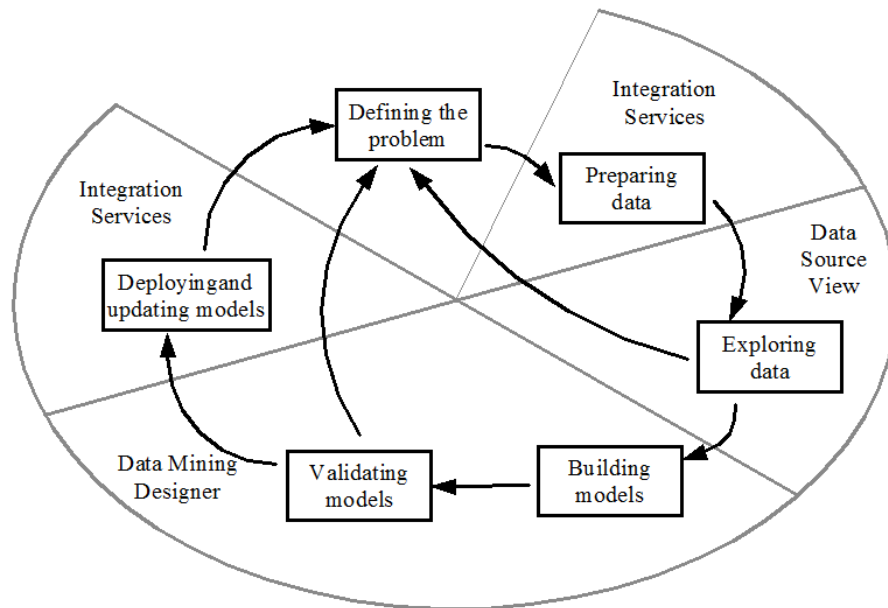

Fig.1 The Application of Data Mining in College English Listening Class by Network Resources

Compared with the traditional information resources, network information resources have a greater advantage in both the quantity, structure, distribution and the comprehensive information degree. For different types of corpora, the scope of this information needs to be restricted. IDF_K is the reverse frequency of the word in the document, and the following is the calculation of IDF_K:

$$IDF_K = \lg(\frac{N}{DF_K})$$

(2)

Where DF_K represents the frequency of the document. The use of the upper level can allow teachers and students to access the network information resources

within the limited area. After the search range is set, the students can be searched in English related corpus. University classroom time is always short, and they can also train according to their hobbies in their spare time. Through such a "student centered" learning mode, students can choose their learning methods according to their own level. After the selection of corpus, to optimize the way of learning English is necessary. The particle swarm optimization algorithm is used to optimize the teaching method. The main parameters of PSO are calculated in Table 1:

Table.1 Main Parameters Calculation Value of Network Resources in College English Listening Particle Swarm Optimization Algorithm

Date Collection	Reaction time of algorithm model	Calculation time of model	Reaction time of athletes	The virtual model generation time
1-100	0.01	0.001	0.2	3.2
100-200	0.02	0.002	0.4	4.5
200-300	0..03	0.003	0.5	3.7
300-400	0.05	0.005	0.6	4.6
400-500	0.06	0.007	0.8	5.5

The particle swarm optimization (PSO) algorithm and genetic algorithm have much in common, which are randomly selected in the initialized population, and then use the fitness function to evaluate and restrict them. Random search is carried out in the target area according to the corresponding fitness values, and the particles are calculated iteratively. It can ensure the speed of search. Since all members of a biological group are searching for food, the distribution of food is unpredictable, so groups are doomed to need a good way to select information. The unpredictability is also the greatest feature of particle swarm optimization. To build the mathematical model of the algorithm is necessary. It can be described in the following mathematical ways.

$$\text{sum} = \sum_k V_k W_k \tag{3}$$

Sum represents the general vector in the Chinese and English texts. V is used to refer to vectors in Chinese text while W refers to vectors in English text. In food area, the best way is to get the particles. As the object of inquiry, particles can represent the corresponding training methods. The set of information represented by the S represents the set of information to be selected for the selected algorithm pattern needed, and it is necessary to pick out an adaptive value from which the value of the X is taken into a target function associated with the solution. These records are numeric, so the best selection of data is made under the constraints of these formulas. Mark them up and search for an optimal value. Where

C (W) is the vector of a word in the text, W represents the same word, and f represents the same number of times. The value of the above K dimension is:

$$f_k = w_k \times k \tag{4}$$

Finally, through the PSO algorithm, the following companies perform the following operations on the selected particles. The way to select the process is as follows:

$$V_i^{k+1} = V_i^k + c1 \times r1 \times (P_i^k - X_i^k) + V_i^k + c2 \times r2 \times (P_g^k - X_i^t) \tag{5}$$

In the upper form, the i=1,2,3... M is used as a particle label. K is a generation of iterations. C1 and C2 are two constant values, which generally take 2. R1 and R2 are the random values distributed between 0 and 1. Therefore, in order to control and carry out the value in a reasonable area, a restriction will be made. The algorithm is mainly through three parts to calculate the particles, to compare and calculate the current position and the best position. Then, the optimal position of the next step is obtained by calculating, and the particles are described in the two dimensional space according to the above formula.

3.2 An Analysis of the Teaching Application of Corpus

In the process of corpus based English teaching, students' network skills and methods should be strengthened and directed. Teachers should help students skillfully use the Internet to collect and organize information efficiently, so as to stimulate students' interest in learning English. Just like classmates driving, students can freely and high speed in the Internet world. Ability is lifelong learning and has a profound impact on the sustainable development of individuals. In other words, teachers must change from the teaching of knowledge to the cultivation of the ability to use the students' corpus, strengthen the cultivation of the ability of the comprehensive application of the students' network, strengthen the consciousness of the students' self-learning on the Internet, and build an efficient College English teaching class in the University. The teaching application of the corpus is as shown in Figure 2 below:
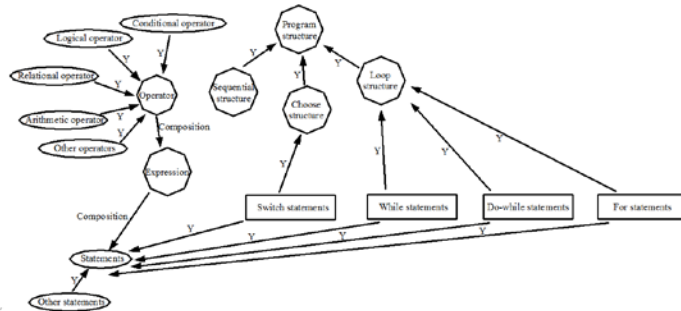
Fig.2 The Application of Network Resources in College English Listening Class

In order to improve the students' self-learning ability, the teachers can write exploratory homework, let the students write inquiring reports, and master the skills of efficient information inquiry. The teacher arranged the students to write the American cultural report, which will not only improve their comprehensive English application ability, but also help them develop their information technology application ability. In addition, in the process of completing the task of independent inquiry learning, the students can also effectively improve the students' teamwork ability, all of which will lay a solid foundation for them to enter the society.

In the course of English Teaching under the background of corpus, teachers need to make full use of the richness and flexibility of the corpus, and improve the students' oral English through a variety of ways of learning. On the Internet autonomous learning platform, students can use ICQ to enter the international chat room. To communicate with English language students in English is very convenient for students. The Internet has created many convenient conditions for College English teaching. Therefore, teachers should make full use of the advantages of the Internet and encourage students to use English to communicate boldly so as to strengthen their English thinking and improve their spoken English. After the combination of corpus, the lifting rate as shown in Figure 3 is obtained:
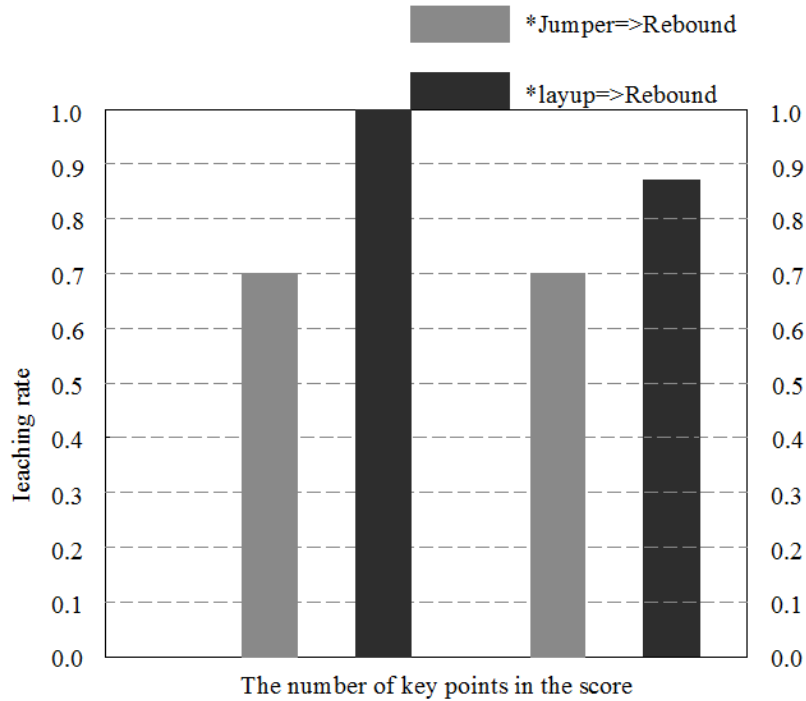
Fig.3 Comparison of Network Resources in College English Listening Class

In the process of English Teaching in the corpus, teachers should make full use of asynchronous communication function to improve students' writing level. Through e-mail to improve writing level, interaction between students is the key. Students inspire each other, help each other, and effectively improve their English writing skills. Generally speaking, using e-mail to improve writing skills, students are naturally the main body. They can break space, culture, and national boundaries to achieve free English communication. All these need to be implemented on a network based communication platform. In contemporary teaching, to make full use of advantage so that English learning is no longer dumb English is necessary. The need to make learning English truly communicate with the world is of great significance to the real improvement of learning ability.

4. Result Analysis and Discussion

With the rapid development of Internet technology, using corpus, College English teaching mode has been laid a good foundation. English should be properly carried out in order to better adapt to English teaching. Using corpus, College

English teaching mode has been laid a good foundation. In order to make the corpus develop well in the application of English teaching, and the effective allocation of curriculum resources and teaching methods according to the teaching objectives, the method of particle swarm optimization is used to optimize the application. The ideal parameters are set in the experiment, and the simulated teaching sample data are generated according to the ideal parameters. Then the particle swarm optimization algorithm is used to optimize the sample data and compare with the pre set ideal parameters to verify the effectiveness of the proposed algorithm. The number of experimental population is 100, the number of parameters is 50, the unit string length is 8, the mutation probability is 0.4, the crossover probability is 0.3, the weight value is 0.5, and the sample size is 100000. The part of the data generated by the experiment is shown in Table 2:

Table.2 Application of Network Resources in College English Listening Teaching

generation	Evaluation error of optimal solution and ideal value	Evaluation variance of optimal solution and ideal value
0	0.237801	0.304212
60	0.064619	0.079817
100	0.031789	0.037737
160	0.013713	0.017816
200	0.008341	0.011675

It can be seen from the above table that after the optimization of particle swarm optimization algorithm, the algorithm can be rapidly iterated and applied. After 60 iterations, it is obvious that the iterative way of the algorithm converges within a certain range. This proves that the algorithm design is successful and reasonable. The classical test method for particle swarm optimization algorithm is that by using the method of Rosenbrock function testing, Rosenbrock is a function of a single peak value, and the variables between them have a strong integrity. Its global distribution is distributed in a very small field, which is distributed between 0 and 1. On the basis, the Griewark function is used as a function of multiple peaks that influence each other, and his domain is also at some minimal point positions. Then we observed and compared the eigenvalues expressed after testing. Draw the trend as shown in Figure 4 below:
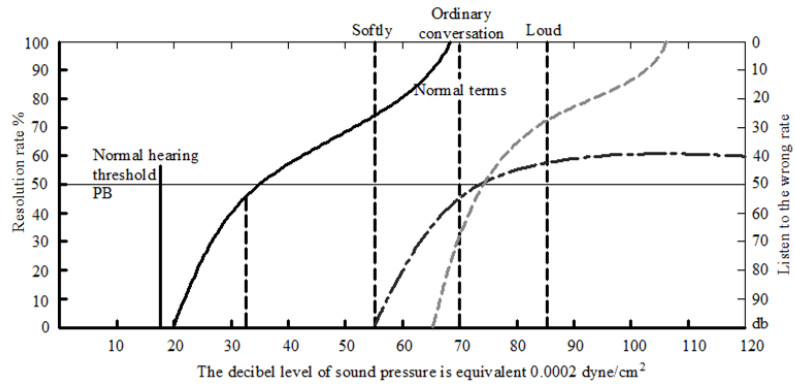
Fig.4 A Contrast Analysis of the Characteristic Values Expressed after the Test of the Data

After the basic optimization and iteration, to optimize and solve the performance problems encountered in the process of processing large quantities of data is necessary. The data will be input quickly when the number of visitors on the platform is the largest, and then the overall performance of the system will be counted. The results of the statistics are shown in Figure 5 below:
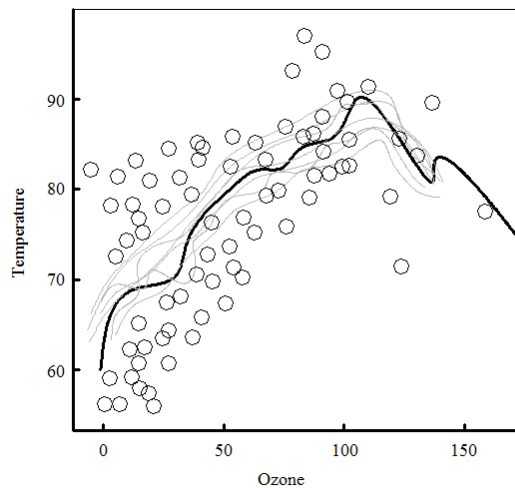

Fig.5 A Test Chart of the Performance of the Application Algorithm of the Network Resources in the College English Listening Class

As you can see from the above diagram, the algorithm system can ensure its flexibility and responsiveness in the process of computing and accessing data at the peak. It is proved that the designed algorithm system can meet the computational problems and meet the role of special purpose English Teaching in universities. By testing the algorithm, many conclusions are drawn. The modified algorithm not only has short computation time and high accuracy, but also achieves better results at the same time. The application of physical energy testing is more extensive, which can reduce the number of queues and increase efficiency. In the same time, more English classes can be used in English classes to help English teaching. Especially in the low grade English teaching, english classes can give full play to its great advantages. Although the algorithm has made great achievements, it still needs to work hard to achieve better results.

5. Conclusion

With the continuous development of computer and Internet technology, the use of corpus for teaching has been the trend of modern teaching. English teaching is a major foreign language for our students. English is also used as an international common language. As a modern person, English must be mastered. In the teaching of English for specific purposes, it is necessary to expand students' Comprehensive English application ability, especially English learning ability. Ability training determines the advantages and disadvantages of English. But the traditional English training mode has been unable to meet the current teaching needs. Because corpus teaching is needed in the process of English teaching, students need to have independent learning ability. The school is not binding on the student, the students' learning time is more flexible. If the students do not have independent learning ability, it will lead to the lack of corresponding results even with the perfect network English training platform. In addition, under the traditional English teaching model for many years, most of the English teachers are still teaching English according to the traditional teaching mode, which is also a great obstacle to the English Teaching of corpus. Today, with the increasingly rich corpus, particle swarm optimization is applied to explore the corpus based College English teaching mode.

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