Intelligent algorithm design of College English Teaching Effectiveness Evaluation

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Abstract. In order to reduce the evaluation errors in English classroom teaching, this paper uses an English teaching evaluation method based on intelligent algorithm. Firstly, the data of English teaching evaluation are collected, the evaluation indexes are selected intelligently according to the existing standards, and a multi-functional intelligent algorithm teaching evaluation model is established, and the hierarchical objective evaluation method is used to design. Experiments show that the error rate of this design method in teaching evaluation is less than 1.5, indicating that the overall evaluation error can be reduced in the actual evaluation.

Keywords: Intelligent algorithm; College English; Teaching effect; Evaluation of teaching

1 Introduction

Nowadays, with the rapid development of network technology and intelligent technology in our country and the deepening of teaching reform, great changes have taken place in the traditional teaching way and evaluation way. The traditional evaluation methods of English teaching are relatively simple, which generally obtain the evaluation through the comparison of grades and the completion degree of practical teaching, so as to achieve the expected evaluation effect. However, in practice, it is easy to be interfered by external teaching factors, resulting in the accuracy and reliability of English teaching evaluation are not high. In view of the above problems, this paper proposes a new way of evaluating the effectiveness of college English teaching combined with intelligent algorithms.

In practice, intelligent algorithms include simulated annealing, genetic algorithm, neural network and Sparrow algorithm. Based on the actual teaching effect of English, intelligent algorithms that are more in line with the reality are selected from the educational and technical perspectives, teaching materials are obtained from the educational and technical perspectives, and multiple evaluation systems are established to realize the statistics and evaluation of teaching data [4]. In the complex environment of teaching evaluation, teachers should constantly adjust English evaluation indicators to improve the scientific evaluation model, so as to provide some references for the reform and application of teaching evaluation model in the future. College English is a public compulsory course for all non-English majors. It usually lasts for two years, with four semesters of freshman and sophomore years. There are many practical problems in college English teaching, such as: large class teaching, fewer class hours, listening and speaking courses in vain, time-consuming and inefficient, single teaching

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methods and so on. Among them, the deficiency of multiple intelligences theory in the evaluation system is mainly manifested as follows:

2 Adding computer algorithms to English teaching

2.1 English teaching assessment data collection

Before establishing the evaluation system of college English teaching based on intelligent algorithm, it is necessary to establish a complete evaluation environment and collect English evaluation data in a specific way. Firstly, a number of data acquisition nodes are set up in the campus network. Each node is independent from each other and has a specific application relationship. In the daily use of the teaching platform, each node will be targeted in accordance with the pre-set goals, so as to form a dynamic data collection mechanism, so that the teaching platform with teaching, interaction, assessment and evaluation of four major functions. According to the characteristics of English courses, relevant departments should design data collection instructions that can carry out data mining according to the data collection methods set up in the course. The collection process of teaching evaluation data is shown in Figure 1 and 2.

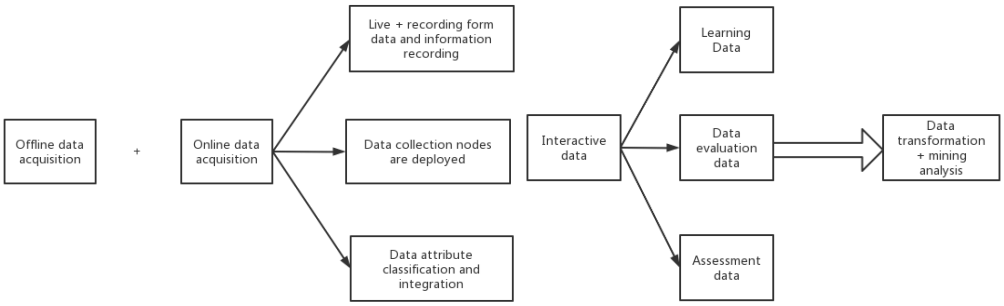

Fig. 1 Teaching assessment data collection process

As can be seen from Figure 1, in English classroom teaching, teachers can adopt the method of live broadcast + video. In this process, the node will capture the students' test scores and convert them into transmission rules identified by the system, and then send them to the corresponding system for reference in the future teaching evaluation. In the collection of evaluation data, teachers should distinguish effective evaluation data, interactive data, learning data and evaluation data, construct dynamic dimensions according to attributes, and comprehensively classify and process classroom activities and teaching effects from the quantity and quality of students' speeches, so as to realize multidimensional collection and integration of data and lay a foundation for subsequent teaching evaluation.

2.2 Construct multi-functional intelligent algorithm teaching effect evaluation model

The evaluation index is selected intelligently and the evaluation system is constructed. Then the multi-function teaching effect evaluation model is constructed by combining the intelligent

algorithm. Summarize and integrate the data obtained above, analyze the setting of English teaching classes, and calculate the evaluation weight of each evaluation cycle. The specific calculation formula is

$$D = 0.5\vartheta^3 - \sum_{i=1} r(t^2 + 1.2i) \qquad (1)$$

Where: D is the evaluation weight; Is the conversion difference; r is the value of evaluation unit; t is the evaluation eigenvalue; i is the test evaluation period. The key evaluation indexes are demarcated by the obtained values, and a more diversified teaching evaluation model is constructed by using fractal evaluation according to the intelligent algorithm. The genetic algorithm in the intelligent algorithm can be used first to calculate the mean value of English teaching evaluation.

This method is used to calculate the unit extreme value difference in English teaching, and the neural network and sparrow algorithm are used to calculate the difference. At this time, the relevant departments should continuously obtain the corresponding evaluation data through the data acquisition node set in a certain period of time, so as to achieve a number of intelligent evaluation. The architecture of the learning effect evaluation mode of multipurpose intelligent algorithm is shown in Figure 2.

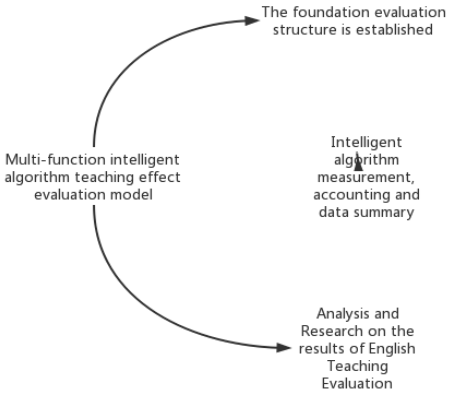

Fig. 2 Teaching effect evaluation model structure of multifunctional intelligent algorithm

As can be seen from Figure 2, based on the needs of English teaching evaluation, basic evaluation indicators in multiple directions have been established. It is worth noting that according to the changes of daily teaching objectives, a variety of evaluation models are used to design the corresponding evaluation objectives and standards, and a targeted evaluation system is established. By adjusting the internal indicators, the evaluation results are more accurate and reliable.

2.3 Hierarchical goal evaluation implementation design

The final test and analysis is completed through the grading objective assessment method, which mainly divides the categories according to the magnitude of importance and sets them accordingly. Under normal circumstances, relevant departments will divide teaching evaluation into different levels according to its importance, and each level should have corresponding teaching objectives. In practical evaluation, dynamic evaluation can be carried out according to

different levels. Then, the interactive hierarchical evaluation difference is calculated, and its calculation formula is as follows

$$F = f[\![2.5V_1 + (\theta^3 \times v_1 v_2)]\!]dv \qquad (2)$$

Where: F is the interactive hierarchical evaluation difference; v1 is the mean value of evaluation; θ is the evaluation vector; v2 is the transformation value of fuzzy evaluation. The English teaching evaluation model is transformed into a targeted evaluation index, and the optimal evaluation value is determined under the determined evaluation criteria, and it is used as a dynamic index of the evaluation cycle, and it is integrated with the teaching evaluation objectives of each stage, and the transformation of the evaluation level is constantly adjusted, so as to form a layered multi-index evaluation level. According to the different evaluation differences, the corresponding guiding evaluation index is set up, and finally the English teaching is evaluated.

3 Method Test

3.1 Diversified assessment methods

First of all, a student's learning profile should be set up. These documents include student reports, compositions, assignments, assignments, diaries, teacher observations of class performance, class discussions, and student materials. For example, the works in the folder can be put into the first draft, revised draft and final draft. During class discussion, the teacher can evaluate the student's performance, completion, etc., and put it on file. It should be pointed out that in the construction of learning archives, attention should be paid to the authenticity of data, self-assessment, learning process and self-learning purposes, rather than comparing personal data with others, more attention should be paid to the encouragement and guidance of students' learning process.

Secondly, the use of the Internet, multimedia and other means to organize a variety of classroom and extracurricular activities, for example, the use of 0 O chat software, let students communicate in English on the Internet, use the network real-time record of students' learning status, and provide help, and according to the online record, make phased evaluation of students' learning.

3.2 Diversity of assessment content

Students' ability to use English should be evaluated comprehensively and objectively, not only based on written tests. Add an estimate. Such as listening, speaking, reciting, speech, writing, situational dialogue and so on. Through the comprehensive test of listening, speaking, reading and writing, it can not only explore students' intellectual strengths, but also make use of various intellectual strengths to learn English and improve their interest in English learning. On the other hand, teachers can actively understand students' learning status, understand their characteristics, and grasp the problems they face.

3.3 Test Preparations

Four classes in school A are selected as the main target objects of the test, and the evaluation cycle of English teaching is set, and the evaluation weight of teaching is determined to be 1.35. Fractal simulation evaluation procedure is adopted to build a dynamic evaluation environment, so as to set the evaluation index standard of basic teaching, as shown in Table 1.

Table 1. Basic teaching evaluation index standard setting table

Test index	Basic criteria for evaluation indicators	Limit variation range
Fuzzy evaluation ratio	2.36	1.25～6.35
Evaluate expectations	11.25	10.35～19.54
Evaluation correlation degree	89	80～96

On this basis, the corresponding evaluation indexes of English courses are established. In daily teaching, relevant personnel can collect and organize teaching materials from many aspects.

3.4 Test process and result analysis

According to the constructed test environment and teaching evaluation criteria, the intelligent algorithm is used to evaluate the students. In a certain period of time, the English scores of the students in the tested class are obtained and compared with the original English scores, so as to obtain the actual differences in teaching. The calculation formula for the error of teaching effect evaluation is as follows:

$$T = l - \mu^{3} \times \left(\frac{hl}{3} + o^{2} \right) \tag{3}$$

Where: T is the teaching effect evaluation error; l is the expected value of periodic evaluation; μ is the overlap weight; h is the number of conversions; o is the evaluation correlation degree. Relevant personnel compared and analyzed the corresponding test results of different methods, as shown in Table 2.

Table 2. Comparative analysis of test results

Test index	Evaluation error of tradition alrandom forest teaching evaluation test group	Traditional big data analysis of teaching evaluation test group evaluation error	Evaluation error of intelligent algorithm teaching evaluation test group
Test Class1	3.05	2.46	1.04
Test Class2	2.51	2.77	1.01
Test Class3	4.61	3.92	1.34
Test Class4	2.61	4.66	1.29

As can be seen from Table 2, compared with the traditional random forest teaching evaluation group and the traditional big data analysis group, the evaluation deviation of the intelligent algorithm evaluation group designed in this study is less than 1.5, indicating that the application of intelligent algorithm in the actual evaluation can reduce the overall evaluation error and improve the evaluation speed. The construction of college English teaching system based on artificial intelligence can improve the teaching quality of college English teachers in our school,

the initiative of non-English majors in learning English, improve students' oral English ability, bring fun to each student's language learning, and reflect the value of artificial intelligence English teaching system in English teaching. English teaching in our country has been facing the problem of lack of practical application and communication skills.

Natural language processing, speech recognition technology and machine translation in the research of artificial intelligence are closely related to language learning. How to use computer to understand human natural language and realize human-computer dialogue has always been one of the concerns of scientists and scholars in artificial intelligence research. The application of artificial intelligence technology in English teaching is likely to be the breakthrough of this research. With the help of modern information technology, our college English teaching can gradually get out of the dilemma of poor teaching quality and effect.

4 Conclusion

Intelligent methods can minimize the calculation errors of evaluation results, improve the overall scoring rate, expand the coverage of English teaching evaluation, gradually build a more stable and safe teaching evaluation system, further clarify the elements and standards to be evaluated, improve the accuracy of evaluation correlation, so as to better reflect the actual effects of English teaching and promote the systematization and perfection of teaching evaluation. In practice, the difference of evaluation is narrowed continuously.

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