

Retraction

Retracted: Research on the Design of English Comprehensive Learning Activities Based on Deep Learning

Mobile Information Systems

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] T. Wang and Y. Gu, "Research on the Design of English Comprehensive Learning Activities Based on Deep Learning," *Mobile Information Systems*, vol. 2022, Article ID 4986792, 7 pages, 2022.

Research Article

Research on the Design of English Comprehensive Learning Activities Based on Deep Learning

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To explore the application ways and effects of in-depth learning in English Teaching for Non-English Majors in Colleges and universities, 419 students are selected for the experiment, 205 students from grade 2018 were used as the reference group and 214 students from grade 2019 were used as the observation group to observe the effect of examination-oriented education and the impact of quality through in-depth learning. The performance of students of grade 2019 in examination-oriented education performance data and quality education performance data was significantly better than that of students of grade 2018, $T < 10.000$, $P < 0.01$, which was statistically significant. Finally, it is found that the intelligent deep learning algorithm is applied to the analysis of the knowledge structure of non-English students' English papers, and the application scenarios of the analysis results are widely developed, which is helpful to improve the English teaching effect of non-English students, improve students' learning efficiency and reduce students' pressure.

1. Introduction

English teaching for non-English majors in colleges and universities is generally used for students to pass CET-4 and CET-6 tests or pass the foreign language proficiency test related to studying abroad. Due to the limited amount of teaching teachers allocated for non-English major students, they are prone to various teaching difficulties in the actual teaching, such as the lack of context environment and the lack of practical training environment. Therefore, most non-English majors will encounter more difficulties in English learning.

In non-English English teaching in colleges and universities, teachers are limited to lobby teaching, separate teacher tutoring, unit tests and exam-oriented explanation. In this teaching process, it is particularly important to acquire students' knowledge structure in unit examinations. In exam-oriented education, found that the students' test scores were not ideal, so in-depth teaching will effectively improve

teaching efficiency, improve students' learning efficiency, and reduce students' pressure.

In the traditional model, teachers obtain students' knowledge structure through visual papers, so as to provide targeted guidance. At this stage, after the introduction of network teaching resources, teachers analyze the knowledge structure of students through in-depth learning, analyze the characteristic data of students' knowledge structure, and realize curriculum recommendations to help students' learning according to the differences of students.

Fei [1] analyzed the problem of senior high school English classroom guidance, and through the construction of senior high school English Classroom Based on deep learning, he believed that only by optimizing the way of senior high school English classroom learning guidance, can students achieve the effect of deep learning in English classroom exploration [1]. Lei [2] pointed out that in English teaching, teachers should take knowledge learning as the carrier, carry out in-depth learning based on core literacy, and develop students' ability

and thinking. In-depth learning requires a good learning atmosphere. Through questions, students are guided to learn knowledge and think well, transform knowledge into language skills and improve their learning ability [2]. Gao [3] discussed that teachers need to guide students to carry out in-depth learning in junior middle school English extracurricular reading teaching, change the current students' English learning state and improve their comprehensive English quality [3]. Pan [4] pointed out that deep learning can help students develop correct reading habits, enable students to clarify the requirements of deep learning, and continuously improve their English learning ability through understanding, practice, and transfer. Combined with the current situation of students' teaching and specific analysis, this paper puts forward to clarify the learning needs and build an efficient English classroom [4]. Yang [5] pointed out that deep learning is a teaching form that attaches importance to students' experience and reflection. In the process of English teaching, the application of the deep learning model can improve students' knowledge structure ability and the ability to transfer old and new knowledge and create an efficient English classroom in junior middle school based on deep learning [5]. Shen [6] analyzed the phenomenon that students generally have a shallow degree of learning and insufficient depth of knowledge in the process of learning English, and tried to continuously explore the educational value of English Reading Teaching in junior middle school from the perspective of deep learning, so as to help students learn better [6]. Guo [7] made it clear that deep learning is a junior middle school English reading teaching strategy from the perspective of deep learning, which takes teachers as the correct guidance and students as the main body of autonomous learning, and pays attention to students' more meaningful learning process, constructs a knowledge system and encourages students to reflect [7]. Shi [8] pointed out that deep learning helps to cultivate students' comprehensive ability of advanced thinking. In the process of daily English teaching, teachers should cultivate students' ability to find and solve problems, so that students can devote themselves to English learning, broaden students' learning channels and promote the development of students' Comprehensive ability [8]. Fu [9] explored deep learning, emphasizing that teachers should break through the thinking patterns in English classroom teaching in the past, which is a new direction of English classroom teaching research and development. It is a powerful measure to improve the quality of English classroom teaching, achieve the objectives of English classroom teaching and improve students' English application ability. Deep learning encourages students to question shallow learning and conduct in-depth exploration and research independently [9]. Shang [10] in-depth learning of English reading can effectively promote the improvement of students' reading ability. Teachers combine teaching experience to promote students' in-depth reading classroom teaching, which provides materials and references for the reform of effective reading classroom teaching in China [10].

Subject to the length, the research introduces a deep learning algorithm based on a multi-column fuzzy neural network to analyze students' knowledge structure under no

intervention condition for daily teaching suggestions and reference data of the Internet teaching system.

2. Comprehensive Evaluation Application of Deep Learning in English Academic Performance

2.1. The Goal of the Classification and Evaluation of English Academic Performance. Test-oriented English education is mainly divided into four categories namely, vocabulary, grammar, composition, and culture; each category is divided into multiple categories, such as the vocabulary category contains the nouns, verbs, phrases, root, temperament, such as culture contains foreign cultural differences, English literature reading comprehension. Therefore, when using deep learning to carry out the comprehensive evaluation of students' academic performance based on question-by-question scores, it is necessary to output multiple separate judgment data. The study also supports the path of data fusion of multiple papers, allowing the system to read multiple paper data at the same time, realizing more detailed and more in-depth data mining analysis.

In related research, artificial intelligence technology is adopted, and the artificial intelligence algorithm is not limited to the neural network, transfinite learning machine, and cellular automata, so as to mine the student learning data available within the authority of the school. Therefore, to realize the corresponding data mining. Huang [11] used neural network technology based on spatial convolution to mine English teaching data and analyzed some of its applications in College English teaching through artificial intelligence technology [11]. Li [12] used this method to analyze the data related to English teaching based on the data mining technology of cellular automata. With the development of artificial intelligence technology, students can realize personalized, intelligent, and interactive learning, cultivate their critical thinking, interactive cooperation, and practical ability, and help students establish the concept of lifelong learning [12]. Wang [13] analyzed the demands of high-quality English education and the balanced development of Regional English education, found the current situation of school English teaching resource sharing, and found that educators should constantly innovate teaching ideas, reform teaching methods, and keep up with the pace of the development of the times to improve the level of education and teaching. Clarify the requirements of in-depth learning and continuously improve the comprehensive ability of English [13]. Pan et al. [14] use deep learning technology to analyze the availability of English-related textbooks [14], Guan [15] discussed the expanded dimensions and executable paths of artificial intelligence and data mining in college English teaching [15], Xu [16] analyzed the application ways and application principles of introducing machine deep learning for non-English majors in the professional English teaching of facial English literature [16]. The innovation points of related research are different, but its core research direction is to find the available data in the English teaching of non-English majors in universities and

then explore the mining path to achieve more efficient data application.

English deep learning is a new exploration of English classroom teaching. To improve the level of education and teaching, educators should constantly innovate teaching ideas, reform teaching methods, keep up with the pace of the development of the times, strive to improve the quality of English classroom teaching, realize the objectives of English classroom teaching and improve students' English application ability. Deep learning needs to break through the thinking pattern in English classroom teaching in the past, Build a deep English classroom; For students, deep learning encourages students to question shallow learning and autonomous learning, so as to better improve their interest and ability in English learning through learning depth algorithm.

2.2. Comprehensive Evaluation System Design for Deep Learning English Performance. In this study, the test knowledge structure can be analyzed only by analyzing the English learning unit test scores of non-English majors. So, all input data are the knowledge classification and student scores for each question in each unit test. In manual visual observation, the definition of knowledge classification of each question is vague. For example, one question may contain lexical content and grammar content, but this model is simplified and only based on its main knowledge classification. Therefore, the data structure of each question is that 1 integer variable represents the knowledge classification of the test question, and 1 single variable represents the student score of the test question. Data integration of a single paper is realized through FNN module, and LNN module is used to build a multi-column neural network, which represents the mastery of students of each knowledge classification. The above logic is as shown in Figure 1:

In Figure 1, the FNN module adopts the sixth-order polynomial deep iterative regression of the fuzzy neural network node mode, with a node basis function such as formula (1); The LNN module adopts log-deep iterative regression of fuzzy neural network node mode, and its node basis function is such as formula (2);

$$y = \sum_{i=1}^n \sum_{j=0}^5 A_j x_i^j. \quad (1)$$

Among: i is the traversal pointer; j is the polynomial order; n is the total number of nodes of the previous neural network; x_i^j is the secondary of j of the i node in the previous neural network; the output value of the neural network node; the regression coefficient of the polynomial of order j ;

$$y = \sum_{i=1}^n (A \cdot \log x_i + B). \quad (2)$$

Among: A , B is the regression coefficient; other mathematical symbols have the same meaning as formula (1); The statistical significance of a sixth-order polynomial deep iterative regression fuzzy neural network is to compress complex array data into one double variable under the premise of minimum data loss and minimum computing

power demand. In this paper, one double variable represents the overall level reflected in a test paper. The statistical significance of the dense data spatial location relationship near the zero value, so as to clearly show the difference in knowledge structure seen by the students.

3. Student's General Materials and Teaching Experiment Design

3.1. General Student Information and Class-Sharing Plan. Due to the need to observe the English performance of students in four years, and according to the requirements of the Ministry of education, in the same grade, each grade adopts the same teaching scheme. This study selects our non-English students in 2018 and 2019. Now we adopt the traditional teaching scheme for the non-English students in 2018 and the intelligent deep learning algorithm for the non-English students in 2019. Finally, we comprehensively analyze the system.

There were 205 students of 2018, 123 boys, 82 girls, the admission age was 18~21 years old, the average age was 19.2 ± 0.3 years old, all full-time undergraduate students, the difference rate of admission scores was less than 13.6%; There were 214 students of 2019, 125 boys, 99 girls, the admission age was 18~21 years old, the average age was 19.1 ± 0.3 years old, all full-time undergraduate students, and the difference rate of admission scores was less than 14.2%; The statistical analysis software (Statistic Package for Social Science, SPSS) was used to perform bivariate t-check analysis of student admission scores (focusing on admission English scores) and other admission records, and found $t > 10.000$, $P < 0.05$. There was reliable statistical consistency. Among them, the bivariate t-check result of $t = 94.367 > 10.000$ and $P = 0.002 < 0.01$ showed significant statistical agreement. It can be considered that students in 2 grades do not have statistical sample differences at enrollment.

3.2. Traditional Teaching Mode. Our school basic popularized the whole school unified English teaching teachers distribution, the introduction of English online teaching auxiliary system, class English extracurricular interest community, implementation with the city universities the English professional unit test, etc., over the years under the traditional teaching system mode has achieved more objective teaching results, in the local university English teaching alliance has a good reputation. Therefore, based on educational ethics, the students who use the traditional teaching model do not have teaching teacher discrimination and other experimental behaviors that violate educational ethics.

3.3. Teaching Mode Based on Deep Learning. The big data machine learning system for non-English major students, as mentioned in Chapter 2, was applied in the teaching process of 2019 students, and the analysis report of the output data was published on the campus network within 48 hours after each test. These data are mainly used in three directions:

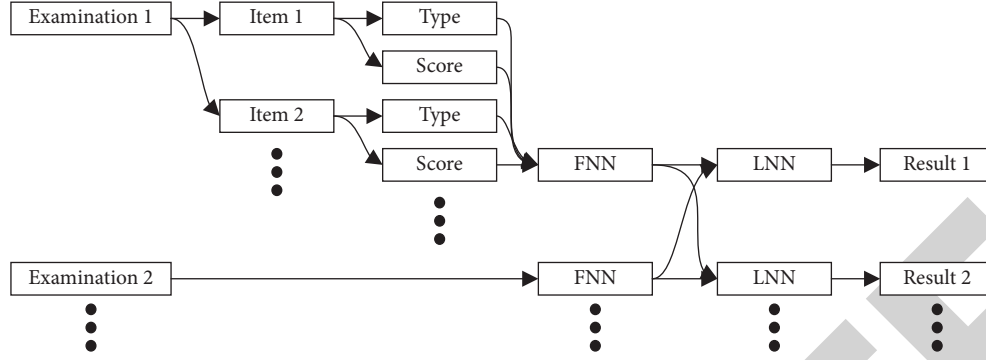


FIGURE 1: The logic architecture of deep learning English Performance Comprehensive Evaluation system based on fuzzy neural network and log-column neural network.

- (1) The data report is sent to the students, which helps students to refer to relevant data and give play to their strengths. To protect students' privacy, the data are not actively sent to other students, and students are not recommended to circulate to each other. When students download relevant data, they need to authenticate their campus network account before downloading their personal data.
- (2) The data report is sent to the students' substitute teachers or substitute teaching assistants, which helps the teachers or teaching assistants to adjust the teaching plan and change the classroom design in the actual teaching, so as to achieve targeted teaching.
- (3) The direct data results are transmitted to the network teaching auxiliary system through API (Application Programming Interface), which allows the network teaching auxiliary system to actively select courses targeted and strengthen the teaching of knowledge points related to the shortcomings of students' knowledge structure.

3.4. *Statistical Method.* The comparison of two groups is bivariate t check under SPSS, t, \dots as formula (3):

$$t = \frac{\mu_1 - \mu_2}{\sqrt{(n_1 - 1)\sigma_1^2 + (n_2 - 1)\sigma_2^2 / n_1 + n_2 - 2 \cdot (1/n_1 + 1/n_2)}} \quad (3)$$

Among: μ_1, μ_2 , the arithmetic average of the two comparison columns; n_1, n_2 , is the number of two elements to be compared with several columns; σ_1, σ_2 , the standard deviation rate of the two comparison columns (see formula 4 for details); t is the bivariate t -check result;

$$\sigma = \frac{1}{n-1} \sqrt{\sum_{i=1}^n (x_i - \mu)^2}, \quad (4)$$

$$\mu = \frac{1}{n} \sum_{i=1}^n x_i.$$

Among: Calculate the results for the standard deviation rate of the input sequence x ; the n is the number of elements

of the input sequence x ; the x_i is the i th input value of the input sequence x ; it is the arithmetic average of the input sequence x ;

4. Teaching Test Results

4.1. *English Test Scores in Comparison.* The results of students' English test are from the joint test of nonprofessional English students in our university, which are generally carried out once a month. The actual scores of each set of non-English students in our school are counted. The results are shown in Table 1:

Table 1 shows the data results of students' English tests. It is obvious that the overall score of students in 2019 is higher than that of students in 2018, which is significantly reflected in the average score and the highest score, and all data groups meet the requirements of $T < 10.000$ and $P < 0.01$. The difference is statistically significant. To deeply observe the above data, we visualize the above data, as shown in Figure 2:

In Figure 2, all 2019 students are higher than 2018, except the standard deviation rate(s) 2019 is lower than 2018. The data performance with a low standard deviation rate represents a more concentrated performance distribution of 2019 students, which is also belonging to the data advantage of 2019 students.

To further observe the exam-oriented education results of the system in college English teaching of non-English major students, analyze the performance of grade 2 students in grade 4 and 6 exams, and focus on comparing the total pass rate and the pass rate of the first test of grade 2 students. The data comparison results are shown in Table 2:

In Table 2, all data had $t < 10.000$, $P < 0.01$, with significant statistical differences. The data show that the students of grade 2019 were significantly better after using this teaching method. To observe the data in the table deeper, the data are visualized, resulting in Figure 3:

In Figure 3, data in each column showed results for 2019 higher than 2018.

4.2. *English Learning Awareness and Compliance Comparison.* The comparison items are the comparison of exam-oriented education, but the current college education should be given

TABLE 1: Comparison table of student English Test scores.

Subgroup	Average	Standard deviation	Highest score	Lowest scores	Pass rate
Level 2018	86.2	14.3	93.7	42.5	85.3
Level 2019	92.7	11.5	98.5	54.3	90.5
<i>T</i>	4.568	3.736	4.251	2.205	1.897
<i>P</i>	0.008	0.006	0.008	0.005	0.002

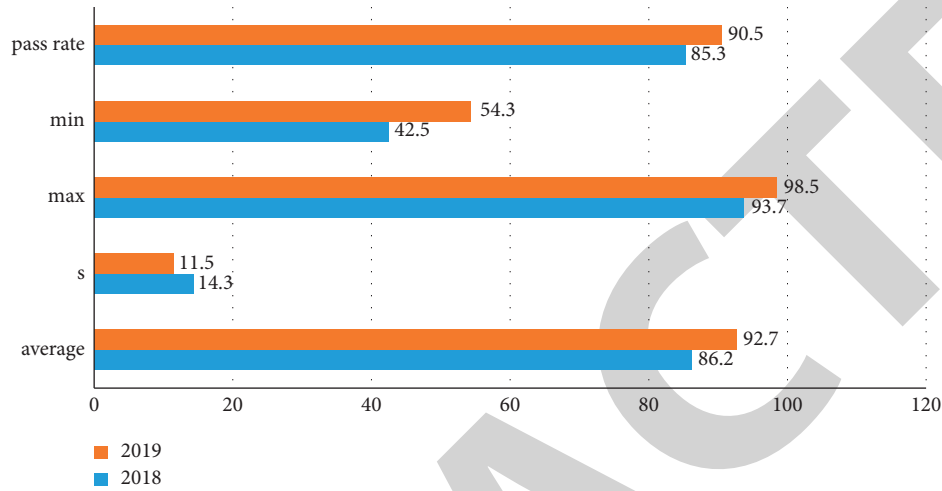


FIGURE 2: Comparing the students' English test scores.

TABLE 2: Comparison of students' grade 4 and level 6.

Subgroup	Grade 4		Level 6	
	Total pass rate	First pass rate	Total pass rate	First pass rate
Level 2018	83.6	67.2	35.4	16.7
Level 2019	97.8	78.6	42.9	22.8
<i>T</i>	5.697	6.057	5.782	5.963
<i>P</i>	0.008	0.009	0.006	0.007

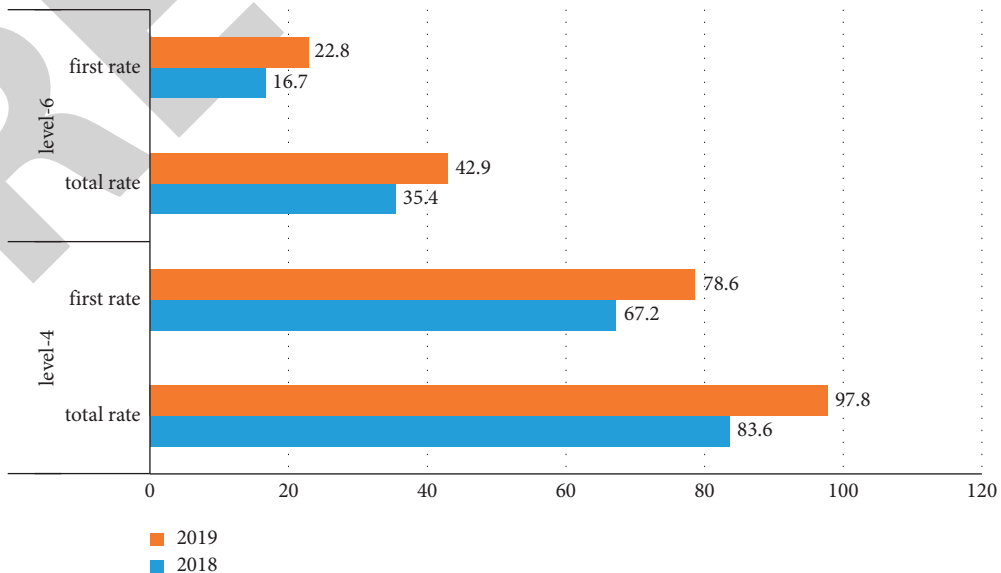


FIGURE 3: Comparison of student pass rate of levels 4 and levels 6.

TABLE 3: Comparison table of students' English Learning awareness and learning compliance.

Subgroup	Absenteeism rate	Late rate	Participation in extracurricular activities
Level 2018	6.52	12.63	73.49
Level 2019	3.92	8.73	86.33
<i>T</i>	1.287	1.365	2.087
<i>P</i>	0.008	0.006	0.004

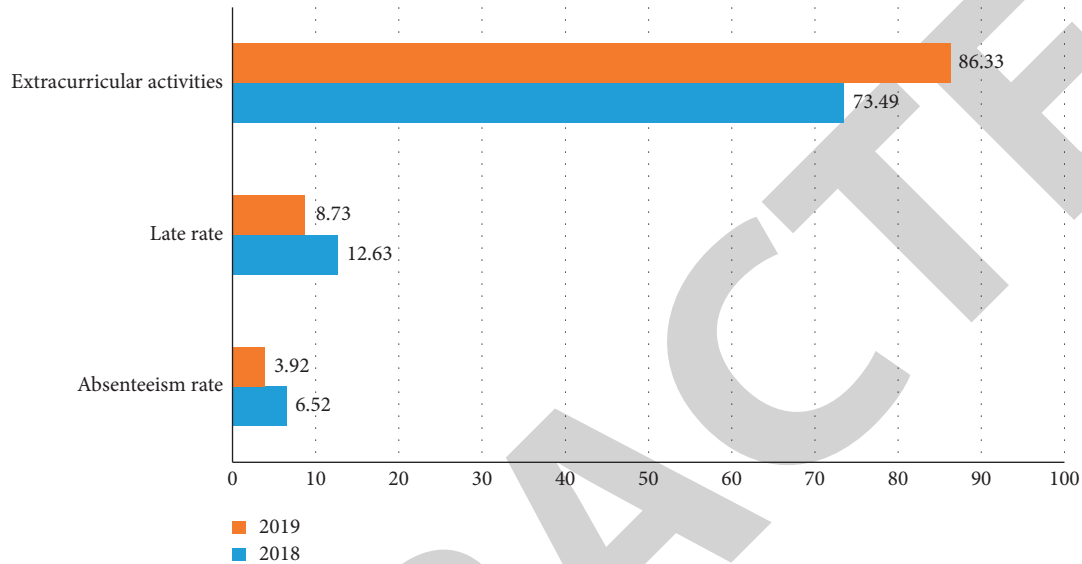


FIGURE 4: Comparison chart of students' English learning awareness and learning compliance.

priority to with quality education, the study compares students to English class and English learning enthusiasm, through the English class call absenteeism and late rate analysis students corresponding to classroom compliance, through the students to participate in English-related community extracurricular activities enthusiasm compare students' English learning enthusiasm, comparison results are shown in Table 3:

In Table 3, $t < 10.000$ and $P < 0.01$, with significant statistical differences, 2019 students have significant advantages in English classroom compliance, English learning enthusiasm and English learning compliance. To deeply observe the above data, the above data are visualized to obtain Figure 4:

In Figure 4, the enthusiasm of students to participate in English-related extracurricular activities, students of 2019 are significantly higher than those of 2018, while the late rate and absence rate of students of 2019 are significantly lower than those of 2018, and the data expression is consistent with the data in Table 3.

5. Application Effect of Deep Learning Technology in Comprehensive Evaluation of English Learning

The comprehensive machine deep learning-based student performance analysis system designed in this study realizes the following innovations in the English teaching practice of non-English major students in universities:

- (1) At any time and objectively understand the students' knowledge structure in the test performance, can be targeted in teaching, can be prepared in learning.
- (2) The system provides the API data interface to other systems, including the English online teaching system, which improves the computing efficiency of other systems and improves the teaching effect of other systems.

That is to words after the system is put into use, the students' learning difficulty is reduced, the learning goals are clear, the teaching difficulty of teachers is also reduced, and the classroom design also obtains clearer goals. Therefore, both sides of English teaching reduce the pressure, relieve students' anxiety about English learning, and improve their learning enthusiasm and classroom compliance. Because of the improvement in teaching efficiency, students' confidence has also been effectively supported, so students' enthusiasm for English learning in extracurricular activities has also been improved. Under the multi-level joint promotion, the positive cycle of students' English learning is formed, and a good teaching effect is realized.

6. Summary

Based on the analysis of the intervention of machine deep learning on the English test papers of Non-English Majors and the extensive development of the application scenarios of the system, the application of a deep learning algorithm

can effectively improve the English teaching effect of non-English majors. However, the system only confirms the application of deep learning algorithm based on the four-year student teaching experiment of our university, which makes the learning difficulty of students lower and the learning goal clear, It improves their learning enthusiasm and learning level, and the analysis data in this paper is only the first batch of students who apply the system. Therefore, there is still much room for improvement in its practical application. The next research direction will further expand the application scenario of the system, further enrich the data collection volume of the system and further improve the teaching quality.

Data Availability

The data underlying the results presented in the study are available within the article.

Conflicts of Interest

The authors declare that there are no potential conflicts of interest in this paper.

Acknowledgments

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