College English Assistant Teaching System Based on Artificial Intelligence

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Abstract. With the development of information explosion and education reform, traditional education is facing great challenges. It is imperative to reform teaching methods and means. As a new teaching method, artificial intelligence technology has been widely used in college English teaching. The system receives information, processes it, and feeds back the results, that is, man-machine conversation. With the rapid development of network and multimedia technology, Teachers should combine network and multimedia technology to improve the diversity and interest of English teaching, so as to improve the quality of English teaching. This paper studies the present situation of English teaching at home and abroad, finds out the advantages and disadvantages of English teaching resources in China through literature retrieval, interview and questionnaire survey. Under the guidance of constructionist teaching theory, humanistic education theory and developmental evaluation theory, this paper analyzes the advantages and disadvantages of English teaching resources in China based on the development characteristics of contemporary college students and the contents of current college English courses. According to the teaching principle of "student-centered, process oriented, communication oriented, people-oriented", this paper analyzes the advantages and disadvantages of domestic English teaching resources The results show that: from the perspective of the purpose of College English learning, to improve students' comprehensive ability and quality, the proportion is the highest, accounting for 26%.

Keywords: Artificial Intelligence, College English, Teaching System, Cognitive Style

1. Introduction
With the continuous progress of computer technology, big data technology has become an indispensable technology in our life. Artificial intelligence is a science that studies human intelligence activities. Combined with the development of network teaching expert system, it can effectively solve the problems in the current college English teaching curriculum reform, realize the sharing of teaching resources, improve teaching quality and improve students' autonomous learning ability.

With the continuous development of artificial intelligence technology, many experts have carried out research on it. For example, some teams in China have carried out research on the error correction
model of words in College English short articles. For the check and correction of word spelling, they have studied four types of errors: insertion, loss, replacement and exchange between letters in non-word errors. The solution to the problem of curriculum content in college English teaching is disjointed. To solve this problem, this paper proposes that students' enthusiasm should be fully mobilized in college English teaching, especially output. We should strengthen students' speaking, writing and translation training. According to the actual situation of students, teachers should increase effective teacher-student interaction, arrange appropriate homework, and strengthen inspection. For the checking and correcting of sentence grammar, it is based on the context information in the training set, and combines the advantages of grammar rule-based and statistical model-based. This paper analyzes and studies the prepositional errors, incomplete sentence elements, singular and plural nouns, part of speech confusion, subject predicate inconsistency and modal (auxiliary) verb errors in Chinese students' English essays. Some teams have studied the research and implementation of diagnostic evaluation model and test paper generation algorithm in grammar diagnosis practice. This paper analyzes the data, studies and implements the diagnostic evaluation model. Then, the author designs and implements two kinds of test question recommendation algorithms based on the diagnostic evaluation model, which improves the diagnostic evaluation function of the College English diagnostic exercise system and the related algorithm for generating test papers. On the basis of diagnostic evaluation model, the paper generation algorithm based on learners' learning state and the paper generation algorithm based on question association rules are designed and implemented, and verified from three aspects: paper generation time, test recommendation and performance improvement [1]. In view of the factors that affect the quality of experimental teaching, this paper analyzes the problems existing in the quality control system of experimental teaching. Combined with the characteristics of experimental teaching and management practice in our school, the construction and optimization of quality control system in the process of experimental teaching are actively explored, and the quality control system monitoring indicators are put forward, which has achieved ideal results in practice. In order to promote the development of students, process evaluation and multiple evaluation will gradually replace the traditional single nominative evaluation. The large-scale network construction and the expanded College English autonomous teaching mode require the development of College English multiple evaluation, which also provides favorable conditions. This paper proposes a scheme to expand English multiple evaluation, and designs an evaluation system based on electronic portfolio [2]. Some other teams have studied the research and application of data mining in College English teaching and assessment. This paper describes the research status of data mining and College English teaching at home and abroad, and puts forward the research content and research methods. This paper discusses the constructiveness of three Multimedia Assisted College English teaching modes: classroom teaching mode, individual mode and network mode. The changes and problems brought about by these models are discussed. The concept definition, theoretical basis, method, operation and attitude are discussed. Based on the theory of intelligent evaluation, standards and methods of College English teaching evaluation, especially the educational evaluation view based on authenticity, impassibility and context driven evaluation. This paper analyzes the possibility of applying game learning in college English teaching from the angle of pedagogy, and then puts forward an experiment of College English teaching mode based on number game learning. Based on the analysis and investigation of Freshman's English teaching needs, this paper holds that college English teaching should gradually turn to ESP teaching, and discusses the relationship between College English teaching and general English teaching, as well as the relationship between College English teaching and general English Teaching [3]. Although the research results of artificial intelligence are quite fruitful, there are still some deficiencies in the research of artificial intelligence Assisted College English teaching system.

In this paper, in order to study the College English teaching system of artificial intelligence, through the research of artificial intelligence, we found the realization of the real word error processing module. The results show that artificial intelligence can be applied to the research of College English auxiliary teaching system.
2. Method

2.1 Artificial Intelligence

(1) Artificial intelligence

Artificial intelligence is a process of mining potential or hidden information and knowledge from massive data through related algorithms [4]. Through the steps of data processing, training model and parameter adjustment, the correlation between information is discussed. Generally speaking, artificial intelligence can be realized on small or large machines to complete the mining target, and can also be used for parallel computing [5]. Even if the calculation is carried out on a computer, some artificial intelligence techniques or methods are still needed. In addition, with the improvement of big data processing capacity, new challenges are also put forward for statistics [6].

(2) Cognitive style

Cognitive style belongs to the category of cognitive psychology, and is an important dimension to study individual differences [7]. For the definition of cognitive style, Albert believes that cognitive style is a typical or habitual way of solving problems, thinking and perception [8]. Field cognitive style refers to the extent to which learners' perception or understanding of information is affected by the surrounding field or scene, and determines the dominance of any part of the dominant organization's perception. It refers to the external environment. Field cognition includes field dependence and field independence [9].

(3) Personalized learning

Personalized learning is to design educational projects, teaching methods and counseling strategies according to learners' interest preference, learning style, learning ability and cognitive level, so as to provide personalized learning content and learning resources for learners [10]. In the field of computer science, the concept of personalized learning is often used to develop personalized online learning system or intelligent teaching system [11].

2.2 Implementation of Real Word error Processing Module

After feature selection, weights are assigned according to the contributions of features. If the correlation between features and head words is high, it means that features are more likely to appear when they appear. The correlation between them is measured by mutual information. In addition, if the correlation between the current features and other confusing words in the confusion set where the head words are located is also high, it shows that the current features have low effectiveness in distinguishing confusing words. Therefore, correlation and discriminant validity are used to determine the weight of features. See the following formula (1-3) for specific definition:

\[
\text{Weight}(f, w_i) = \text{Relativity}(f, w_i) \times \text{Distinction}(f, w_i),
\]

\[
\text{where: } \text{Relativity}(f, w_i) = \log \left( \frac{P(f, w_i)}{P(f) \times P(w_i)} \right),
\]

\[
\text{Distinction}(f, w_i) = \frac{\text{Count}(f, w_i)}{\sum_{i \in l} \text{Count}(f, w_i)},
\]

For different parts of speech in the confusion set, collocation features are selected; for the same parts of speech, context features are selected. Through the definition of the previous feature set, the score of the word \( w_j \) in the current test case can be obtained, as shown in formula (4):

\[
\text{Score}(w_j) = \sum_{f \in \text{final \_test}} \text{weight}(f, w_j)
\]
The knowledge points and question type score rate of learners are read from the database and stored in the form of matrix. There are \( n \) learners, each learner's knowledge points and question type score rate is \( m \) item, the elements in the matrix; \( ^{\wedge} \) represents the scoring rate \( J \) of the \( i \)-th learner, and the matrix formula (5) is as follows:

\[
\begin{bmatrix}
  x_{11} & x_{12} & \ldots & x_{1m} \\
  x_{21} & x_{22} & \ldots & x_{2m} \\
    \vdots & \vdots & \ddots & \vdots \\
  x_{n1} & x_{n2} & \ldots & x_{nm}
\end{bmatrix}
\]

(5)

3. Experience

3.1 Experimental Object Extraction

The research process of "Internet plus" formative assessment model and verification model of College English writing. The construction of the model includes how to design the model framework, how to determine the evaluation index, how to determine the scoring standard, and how to carry out the manual evaluation in the experiment. In the second semester of sophomore, most students are preparing for CET-4. In order to ensure the standardization and efficiency of mutual evaluation, teachers use the self-evaluation function of the marking network to assign mutual evaluation tasks to students. Referring to CET-4 writing scoring standard and the full score scoring standard of the marking website, the scoring standard is drawn up on the basis of the evaluation index, and the concise and easy-to-use self-evaluation and mutual evaluation form are made, and the students are explained and trained, so as to ensure the quality of students' self-evaluation and mutual evaluation.

3.2 Experimental Analysis

Using three formative assessment methods, namely teacher assessment, self-assessment and peer assessment, this paper constructs a formative assessment model of college English writing based on network, and determines the framework of the model: (1) researchers and teachers negotiate to formulate curriculum assessment indicators and criteria; (2) Teachers explain to students in class and give them graded training, so that students can make clear the evaluation indexes and standards; (3) Teachers require students to complete the first draft of homework after class and submit it to the correction network; (4) Students are required to conduct self-assessment through the Internet; (5) Encourage students to evaluate and revise their compositions with reference to the Internet and submit them many times; (6) In class, teachers organize students to evaluate each other under the network model, and students point out the advantages and disadvantages of peer composition, discussion and comment; (7) Students revise their compositions and submit them to the Internet again; (8) Teachers and researchers refer to the network for evaluation; (9) Teachers and researchers manually correct students' compositions; (10) Teachers feedback and explain the personality and common problems of manual scoring in class; (11) Teachers adjust and improve the evaluation indicators and standards, and require students to reflect, summarize and practice according to the feedback of manual evaluation, and make timely adjustments in the next stage of learning.

4. Discussion

4.1 Forms of Teachers' Use of English Teaching Resources

When asked whether the English-assisted teaching resources used by teachers combine rich images, sounds, animations and other effects, most students answer yes, but some students answer "few" or "never". This fully shows that the form of English auxiliary teaching resources used by teachers is too single, and the consequences can be imagined, that is, students' interest in learning declines, and the
teaching effect is not good, which is also a problem to be solved in auxiliary teaching methods. See Table 1 for details.

**Table 1.** The use of auxiliary teaching resources in combination with images, sounds and animations

| Combined with the situation | Yes | Happen now and then | Often | Very Seldom | Never |
|-----------------------------|-----|---------------------|-------|-------------|-------|
| Frequency                   | 15  | 34                  | 23    | 21          | 18    |
| Percentage                  | 13.5% | 30.6%             | 20.7% | 18.9%       | 16.2% |

It can be seen from the table above that when asked whether the auxiliary English teaching resources used by teachers combine rich effects such as images, sounds and animations, the percentage of students answering "yes" was 13.5%, the percentage of students answering "sometimes" was 30.6%, the percentage of students answering "often" was 20.7%, the percentage of students answering "rarely" was 18.9%, and the percentage of students answering "never" was 16.2%. The results are shown in Figure 2.

**Figure 1.** The use of auxiliary teaching resources in combination with images, sounds and animations

The results show that most teachers and students are willing to use English teaching resources for teaching and autonomous learning. Most English teachers will use multimedia assisted teaching resources in class, but some teachers are not proficient in the use of auxiliary teaching resources.

4.2 The Main Purpose of Learning English in College

According to the purpose of learning English in university, it can be divided into six situations: A likes English, B needs English communication, C improves comprehensive ability and quality, D is competitive in working or going abroad, E has no purpose, F has completed his studies and completed credits. As shown in Table 2.

**Table 2.** Main purpose of learning English in University

| Objective | Like English | English Communication Needs | Improve Comprehensive Ability and Quality | Competitive at Work or Abroad | There is No Purpose | Complete Your Studies and Complete Your Credits |
|-----------|-------------|-----------------------------|------------------------------------------|-------------------------------|---------------------|-----------------------------------------------|
| Proportion| 21%         | 13%                         | 26%                                      | 15%                           | 8%                  | 17%                                           |

It can be seen from the above that according to the purpose of learning English in University, the proportion of the purpose to like English is 21%, the proportion for the purpose of English communication is 13%, the proportion of the purpose to improve the comprehensive ability and
quality is 26%, the proportion of the purpose to work or go abroad to be competitive is 15%, the proportion of the purpose is to have no purpose is 8%, and the proportion of the purpose is to complete the academic credits 17%. The results are shown in Figure 2.

![Figure 2. Main purpose of learning English in University](image)

It can be seen from the above that, according to the purpose of learning English in University, the proportion of the purpose to improve the comprehensive ability and quality is the highest, the proportion with the purpose of no purpose is the lowest, and the proportion of the purpose of working or going abroad to be competitive is higher than that of English communication.

5. Conclusion
With the deepening of college English teaching reform, the three-dimensional teaching system environment under the multimedia network environment has been established. However, how to combine traditional classroom learning with online autonomous learning is the core problem that we must solve. To solve this problem, the topic-based college English teaching model can effectively combine college English teaching with English teaching. Artificial intelligence is an important course in computer science and technology. It is a comprehensive subject to simulate and expand the function of human brain by computer. This paper discusses the unstructured experimental teaching scheme and research funding in colleges and universities from three aspects, and solves the problems existing in the experimental teaching of artificial intelligence in colleges and universities. Based on the teaching practice, this paper discusses and summarizes the teaching system, teaching content, teaching materials, teaching methods and assessment methods. Through computer and network, the essay is evaluated, and the improvement suggestions of application software are put forward, mainly aiming at the scores of large-scale essay exams. In order to promote the application of automatic scoring system in college English writing. In the intelligent learning environment, effective educational design, sufficient intelligent design and effective education, learning language knowledge, language skills training and autonomous learning teaching activities are the key. Educational practice shows that the real task promotion ability can stimulate students' enthusiasm and enthusiasm, and define their learning objectives.

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