Automatic Correction Service System for English Composition based on Big Data

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Abstract. With the rapid development of science and technology, big data is gradually being applied to the field of English writing teaching. On this basis, an automatic correction system is developed to automatically evaluate and feedback students' compositions. This has become the future of feedback research and development. Writing is a cyclical creation process. The correction and feedback of composition is very important in writing teaching. However, in traditional teaching, due to the heavy workload of teachers, it is difficult to give feedback sentence by sentence, and there may also be inefficient feedback. In view of this, it is necessary to conduct an in-depth discussion on English composition based on automatic correction system, and on this basis, explore the automatic correction service system for English composition based on big data, so as to provide inspiration and reference for the evaluation of English writing teaching. The study found that the automatic correction service system came into being, which made up for the shortcomings of composition feedback in traditional teaching. Moreover, the automatic correction service system for English composition based on big data has many advantages compared with teacher correction, and it can accurately provide Students point out errors in writing, which can reduce teachers' workload and improve teaching quality. In addition, this article also summarizes the shortcomings of the automatic correction service system and puts forward suggestions in order to better apply the automatic correction service system to English writing teaching.

Keywords: Big Data, English Composition, Automatic Correction Service System, Composition Feedback

1. Introduction
In view of the current development trend, big data [1-2] has become an important carrier in the information age and has contributed to the development of vocational education and foreign language teaching. The main purpose of the English composition automatic correction service system [3-5] is to provide online automatic text editing services for English teachers and English majors in various universities, so as to reduce teachers' correction work and improve teachers' level and work efficiency. In addition, instructing English students to improve their English writing skills can help the instructor better understand the students' English level.
A common problem in Chinese college English composition teaching [6-7] is the time limit for class time and written instruction. Most non-English majors in universities do not have specialized writing courses, and writing and teaching are basically intertwined with advanced English reading teaching. In the classroom, we only focus on writing skills, and students have received enough written training after school. Therefore, English writing has always been a relatively weak link in Chinese college education. As we all know, one of the important ways to improve English spelling is to allow students to practice English spelling frequently, so that students' English composition can receive serious evaluation and feedback. However, when the time and energy of the English writing teacher are limited, it is difficult to seriously correct the errors in the students' English writing. Although students have completed many English essays, this trend will continue for a long time. However, due to the lack of teachers who can correct English writing errors [8-9], students will not be able to benefit a lot from traditional English writing practice. English proficiency will not improve significantly, so the quality of English teaching in Chinese colleges and universities will affect the overall improvement.

Therefore, this article studies the in-depth study of English composition based on automatic correction system, and on this basis, explores the automatic correction service system for English composition based on big data, so as to provide inspiration and reference for the evaluation of English writing teaching. According to this research, the automatic correction service system for English composition based on big data makes up for the lack of composition feedback in traditional teaching [10]. It can accurately point out errors in writing for students and reduce teachers’ work. Increase the quality of teaching.

2. English Composition Automatic Correction Service System based on Big Data

2.1. Teaching Practice of English Composition Automatic Correction Service System

From the perspective of traditional teaching practice, English writing is usually a teaching method based on learning results. Most front-line teachers adopt the four-step traditional teaching model of "suggestion-writing-comment-feedback". This teaching model can give full play to the leading role of teachers and help students master the correct language form quickly and effectively. However, teacher feedback is mainly summary comments, mainly including results and short comments. Feedback on composition revisions is usually not effective.

From the very beginning, the emergence of the automatic correction service system has changed the traditional assessment mode, which can significantly improve students' self-study ability. This grading method comprehensively evaluates students' composition from six aspects: content relevance, text, structure, sentence, phrase collection, vocabulary and fluency, and can effectively evaluate students’ word collocation and sentence structure. Identify and correct language problems, analyze individual students’ personality problems in real time, and provide information support for personal learning and information transmission methods.

2.2. The Concrete Realization of the System

For English composition, the automatic correction service system is an inevitable product of the development of artificial language technology in the era of big data. This is an online service that can automatically correct the system based on corpus and cloud computing. It calculates the gap between student composition and standard corpus, promotes student coordination, and guides writing by providing students with personalized and professional composition evaluation, thereby effectively reducing the workload of English, thereby improving the level of evaluation and improving teachers’ composition and composition Improve students' writing skills.

The accuracy of the part-of-speech tagger is an important indicator for judging the part-of-speech tagger. The calculation formula is shown in formula (1):

$$\text{posprerate} = \frac{\text{rightTokenCount}}{\text{totalToken}}$$  \hspace{1cm} (1)
The average vocabulary length is expressed as the quotient of the word length and the number of words, namely:

$$\text{avgWordLen} = \frac{\sum_{i=1}^{n} \text{wordLen}_i}{n}$$  \hspace{1cm} (2)

Word frequency refers to the frequency of a given word in the document. The calculation formula for word frequency is:

$$tf_{i,j} = \frac{n_{i,j}}{N_j}$$  \hspace{1cm} (3)

In formula (1), posprerate represents the accuracy of the part-of-speech tagger, rightTokenCount represents the number of correct tokens, totalToken represents the total number of tokens; in formula (2), avgWordLen represents the average word length, wordLeni represents the length of the $i$-th word, $n$ represents the number of words; in formula (3), $n_{i,j}$ represents the number of occurrences of word $i$ in document $j$, and $N_j$ represents the total number of words contained in document $j$.

### 3. Experimental Thinking and Design

#### 3.1. Experimental Ideas

This paper discusses the English composition based on the automatic marking system, and then explores the English composition automatic marking service system based on big data. The traditional teachers' marking is taken as the control group, and the English composition based on the automatic marking system is taken as the experimental group for comparative study, so as to provide enlightenment and reference for the evaluation of English writing teaching.

#### 3.2. Experimental Design

An automated correction system is a good way to teach English composition. Current feedback and sentence comments have partially replaced the teacher's teaching. On the one hand, it reduces the workload of teachers and improves teaching efficiency. On the other hand, it stimulates students' enthusiasm for writing and improves their ability to learn independently.

However, due to language changes and development, the automatic correction system also has some shortcomings in its use. For example, because the system is only a general assessment of language use, it cannot accurately assess the internal quality of writing, such as sentence consistency, content logic and creative ideas, etc., so it cannot assess the level of students' English writing. In one academic year, this article selected three papers, including 138 real papers, 46 papers each time. After the student submits the settings, the system will immediately give the combined result with a full score of 100. The results are analyzed by Excel 1 statistical software, as shown in Table 1. This article analyzes the student article by comparing it with six articles. This article compares and analyzes the students' essays from six aspects: the overall score of the composition, the number of submissions, the change of various language errors, the number of words written, the structure of the chapter, and the positive comments.

| stage         | Fractional segment |
|--------------|--------------------|
|              | 60-70  | 70-80  | 80-90  | 90-100 |
| the first time| 0      | 5      | 37     | 4      |
| the second time| 0     | 19     | 25     | 2      |
| the third time| 19     | 18     | 9      | 0      |
4. Discussion

4.1. Discussion on the Automatic Correction Service System for English Composition based on Big Data

As a new type of online learning system, the English automatic correction service system can effectively improve the effectiveness and accuracy of teachers' correction work, and has a better auxiliary effect on students' English writing skills. Teachers who apply the automatic correction service system to English composition believe that the automatic correction service system as a whole will play a very important role in improving the quality of teachers' work and improving students' writing skills. At the same time, the automatic correction system can become an excellent platform for teacher-student interaction. Students can get feedback and guidance from teachers in time, so as not to forget the knowledge points; teachers can communicate with students in real time, and they can get in touch with students in a short time. Solve common problems in the homework in time to solve the problem, and first discuss the content or errors of the homework with the students to improve the overall effect of the course. Of course, in the application, the English composition automatic adjustment service system also has some shortcomings that cannot be ignored. On the one hand, after all, network work is too mechanized to replace the wisdom of the human brain; on the other hand, although the manual review function of the English composition automatic correction service system can make up for the formalization of machine work, it requires teachers to spend a lot of time sitting at the computer and reviewing the students' composition, this changed the original intention of the software design, but increased the workload of teachers.

![Figure 1. Overall score change trend graph](image)

It can be seen from Figure 1 that the number of articles in the high segment (80-100 points) of the three essays gradually decreases, and the decline is relatively large; the number of articles in the low segment (60-80 points) basically shows an upward trend. Most of the first and second essays focused on the 80-90 subsections, while the third essay scores were mostly lower than 80 points. In addition, this paper also compares the three essay scores of a single student horizontally, and finds that 80.4% of the students' essay scores gradually decline. The survey found that because the first composition sample was the first time for students to use the English composition automatic correction system to write, in order to encourage students and increase their self-confidence, the teacher deliberately increased the system's composition scoring standard value; to the second and third For the second essay, the essay scoring standard value is adjusted to the normal range, which directly makes the
student's last two essay scores significantly lower than the first essay score.

![Figure 2](image.png)

**Figure 2.** Statistics of the number of submissions of the automatic correction system

The automatic marking system scores and comments the compositions submitted by students. At the same time, the system will record the number of times students submit the composition, the score obtained each time, and the modification of each time. This article uses Excel software to count the three compositions, and the results are shown in Figure 2. In the first composition, 16 people submitted 1 time, accounting for 34.8% of the total number (46 people). They did not modify their composition based on the feedback from the system; the remaining 30 people did the composition once, two, or more revisions and submissions were made. In the second and third essays, the number of people who submitted 2 or more times has increased, indicating that more and more students are willing to modify their essays based on the feedback provided by the system to get a more ideal composition score.

4.2. Advantages of the Automatic Correction Service System for English Composition

4.2.1. Ability to improve students' autonomous learning ability. In traditional writing teaching, students generally receive knowledge passively. After the automatic correction system clearly points out the errors in writing, if students are not satisfied with the scores and evaluations, they can repeatedly modify and submit according to the feedback results and modification suggestions until they reach the highest score, and the system will record every time of modifications. In the process of repeated corrections, students are able to independently learn knowledge such as vocabulary collocation and grammar, which also improves their self-confidence in writing.

4.2.2. Promote teacher education and research. When the teacher corrects the composition, it is necessary to often correct the same mistakes in the student's composition, which requires the teacher to spend more time and energy on repetitive tasks. The automatic correction system has the function of "Teacher Correction and Reuse". Once the teacher corrects the error, the correction network will register based on the system knowledge. In subsequent corrections, no matter how much the knowledge point and the purpose of the knowledge point change, it is automatic.

4.2.3. The latest feedback and analysis instructions. Teachers need to spend a lot of time and energy to correct the composition of dozens of students in traditional writing class. After a few days, students may not receive feedback from the teacher. After a few days, students may forget the previous written
content. Therefore, delayed feedback will destroy students' enthusiasm and motivation to improve their writing. The automatic editing system can generate the results and comments immediately after the students submit their papers. They can point out the mistakes in students' writing such as spelling, grammar, format and other errors in the online system. This makes it convenient for students to strike while the iron is hot after finishing the composition, accurately realize the mistakes in writing, and correct them at the first time, instead of simply focusing on the score of composition.

5. Conclusions
In the research on the automatic correction service system for English composition based on big data, this article studies the huge changes that will be faced by English composition correction under the influence of big data, and conducts an in-depth discussion on English composition based on automatic correction system. On the basis of exploring the automatic correction service system for English composition based on big data, this article also summarizes the shortcomings of the automatic correction service system and puts forward suggestions, so as to better apply the automatic correction service system to English writing teaching, so as to write for English The evaluation in teaching provides inspiration and reference. The research results show that, as a new type of online learning system, the English automatic correction service system can effectively improve the effectiveness and accuracy of teachers' correction work, and has a better auxiliary effect on students' English writing skills. However, it should be noted that in practical applications, computers cannot solve all problems. When we benefit from the system, we need to objectively and rationally evaluate the shortcomings and deficiencies of the system and various problems that may arise in the process. Further discussions and improvements must be combined with actual work to promote the harmonious and interactive development of teaching and learning.

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