

Research on the Application of Intelligent Evaluation and Teacher-student Cooperation Assessment System in Teaching English Writing

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ABSTRACT

Low efficiency in teaching and time-consuming in writing evaluation are two big problems for college English teachers. Therefore, it is necessary to create a new teaching model to solve these problems existing in traditional classroom-based teaching. This research adopts the research methods of test comparison before and after the students' composition experiment, questionnaire and semi-open interviews. Empirical research on a new teaching model that integrates the intelligent composition review and reform system represented by Piangai.com and the collaborative evaluation of teachers and students is conducted. The research results show that the new writing teaching model improves the quality of students' writing, promotes students' learning initiative, and enhances students' writing self-efficacy. This writing teaching model provides ideas for solving the problem of time-consuming and inefficient English writing teaching in large classes.

1. Introduction

Instruction of college English writing plays an important role in college English teaching. Traditional English writing teaching has the problems of large class size, heavy curriculum burden on teachers, difficulty in ensuring timely feedback on students' composition, and lack of individualization in student learning^[1]. Now the new generation of college students has distinctive characteristics in terms of cognitive models, study habits, and information technology applications^[2]. The above reasons determine that college English writing teaching needs to explore diversified models. It is an urgent task to create an English writing teaching model combining the traditional education model with the advantages of modern network technology.

With the development of education informatization, computer-assisted foreign language writing (Computer Assisted Foreign Language Writing, CAFLW for short) has become the focus of foreign language education research^[3-5]. Among the numerous computer-assisted foreign language writing websites in China, Pigai (an intelligent composition review software) has the largest number of users. This intelligent online automatic composition correction system is based on natural language processing technology and corpus technology. It analyzes students' compositions comparing with the standard corpus. The distance between the students will be scored instantly on the written English composition of students, multi-level analysis of the content and suggestions for improvement^[6]. Compared with the traditional teaching mode, Pigai, as an intelligent online automatic composition correction sys-

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tem, has the advantages of simple use process, easy learning and operation, instant feedback and sentence-by-sentence comments, suitable for independent training and convenient for teachers' teaching and research. And some scholars Lee et al ^[7] found that learners who received dual feedback from the intelligent writing platform and teachers were better than those who only received single feedback from teachers in traditional teaching, regardless of the content and structure of the composition. The overall score was still better.

Pigai intelligence composition review currently has certain limitations, such as the inability to independently determine whether the content is wrong; pointed out the problem of writing, but cannot provide correct examples; some serious grammatical errors cannot be recognized by the system; functions in logic and text structure need to be strengthened ^[8]. The peer feedback method helps students to exchange ideas and learn from each other's writing materials, which can effectively improve students' ability to write content and topics. Students agree with the participation and interaction brought by peer feedback, but they tend to be based on teacher feedback. A teaching model supplemented by peer feedback ^[9]. Yang Yonglin et al ^[10] conducted research on students who used the intelligent writing platform for teaching experiments and found that Chinese students relied more on teachers in evaluating emotional cognition. Teacher evaluation has more advantages in various forms of evaluation. If students can discuss with peers and teachers more in the writing process, change from one-time drafting to repeated revisions, and from one-way feedback to multi-way feedback, it can enhance students' sense of self-efficacy and significantly improve students' writing ability and writing scores ^[11].

To solve this problem, self-assessment, peer assessment, automated assessment and teacher assessment are integrated in the instruction of English writing. However, there are few research examples on how to use a simple and practical intelligent online review system and teacher-student cooperative assessment in the process of writing teaching to improve students' independent writing ability and writing motivation. In order to improve students' interest in writing and writing quality, Teacher-student Cooperative Assessment (TSCA) is adopted based Production-oriented Approach (POA) in teaching theory, the author takes the students as the center and integrates the intelligent automatic online review system with teachers and students. After the integration of cooperative evaluation theory, it is introduced into English writing teaching, giving full play to its advantages such as individualization, instant feedback, sentence-by-sentence comments, online revision, and joint participation of teachers and

students, so that students can have the joy of writing in the process of multiple manuscript revisions and realizing self-exploration and self-innovation construction. It is expected to enhance the self-efficacy of students' writing ability, and improve the motivation and writing ability of English autonomous writing.

2. Theoretical Basis

2.1 Process Writing Theory

Process writing is a teaching method of writing courses popular in Western education systems in recent years. The core idea is that the writing process is a process of gradual improvement, in which teachers' guidance is needed, and students' own deliberate learning is combined to express the thoughts of the article through multiple revisions ^[12]. The teaching of process writing focuses on the writing process and content, so that students can think about and modify the language use and article structure ^[13]. This teaching method is student-centered, focusing on students' learning needs, the use of text, autonomous learning and the use of target language, but it also has certain limitations. Only using the process writing teaching model cannot solve the problem of large class size. And the needs of students are different. Individual students will be entangled in details, easy to deviate from the subject and waste class time ^[14]. Therefore, in this study, teacher evaluation, student self-evaluation, and peer evaluation are introduced into English writing teaching, which effectively solve the limitations of process writing.

2.2 Self-efficacy Theory

Writing self-efficacy is reflected in the author's confidence in completing specific writing tasks, and has a significant impact on students' composition performance ^[15]. The purpose of self-efficacy theory is to develop students for the learning potential of students. Teachers need to work hard to improve students' sense of self-efficacy in writing during the writing teaching process, so that they have a certain interest in English writing, which is ultimately reflected in the improvement of English writing ability and performance ^[16]. Traditional English writing teaching is aimed at taking exams, lacking initiative in writing topics, and difficulty in overcoming writing difficulties on their own. These factors will lead to a decrease in students' sense of self-efficacy in the process of English writing ^[17]. Establishing a diversified writing feedback mechanism of intelligent revision, The combination if student self-evaluation, teacher evaluation, and peer evaluation can enable students to clarify the content of writing, plan writing tasks reasonably, present writing topics better, and enable students to achieve self-efficacy in the writing pro-

cess, and effectively improve the writing ability and writing score^[18].

2.3 Teacher-student Cooperation Assessment (TSCA) in POA

“Teacher-student Cooperation Assessment” is the evaluation based on the “Production-oriented Approach”, which is used to make up for the problem of large class size and delayed-effective evaluation feedback. It consists of three parts: before class, during class, and after class. In the pre-class stage, the teacher first selects the topic, and selects articles with the same topic for “guide reading”, so that students have a clear understanding of the content of the topic, and then selects typical samples in the composition submitted by the students; Common problems are analyzed and targeted training is given. At the same time, peer evaluation training is conducted. After class, combined with teacher professional guidance, student self-evaluation and peer evaluation, students will revise and improve their self-writing skills again^[19]. “Teacher-student Cooperative Assessment” is not a simple superposition of teachers and other evaluation methods, but breaks the boundary between “learning” and “evaluation” between teachers and students, and integrates evaluation into the learning stage, which plays a role in deep learning.

The preliminary teaching research of TSCA has a certain foundation^[20,21]. Through the method of experimental design, it studies the influence of TSCA on college English writing. Compared with traditional writing teaching methods, TSCA method can promote students to better master language skills and fully mobilize students’ learning enthusiasm and initiative. However, the TSCA teaching methodology also has certain shortcomings in teaching practice. The main problem is that the TSCA teaching model has high requirements for students and a large amount of output tasks. It is impossible to guarantee timely feedback solely by individual teachers. The introduction of an intelligent online automatic composition correction system can effectively solve the problem of a large amount of review work in the after-school phase, and provide immediate feedback to students. The intelligent composition review system effectively solves students’ language-level problems, such as spelling, vocabulary, grammar, etc.; and TSCA provides help for students’ further improvement of writing content, writing framework and language. The two complement each other can improve students’ writing quality and writing efficiency.

3. Research Design

3.1 Research Object and Process

The subjects of this study are students from four teach-

ing classes taught by the author, with a total of 175 students. All the students tested have scores of 110 or more in the college entrance examination, so there is little difference in the level of students’ English college entrance examination. The experiment period is from the first week to the fifteenth week. The teaching of writing for students is based on the teaching theme of “New Standard College English”. Students will draft four writing tasks in the experiment period, which are Task 1: Discovering yourself; Task 2: Discovering yourself (Second draft); Task 3: How to Tell Chinese Stories in English; Task 4: How to Tell Chinese Stories in English (Second draft). The students first complete the writing topics assigned by the teacher (tasks 1, 3) within the time limit specified on the Pigai review online and modify them according to the computer review comments; after the writing task, the teacher conducts a common analysis based on typical samples; the teacher conducts peer evaluation among the students after training; Finally, students submit their writing content (tasks 2 and 4) in Pigai according to the teacher’s revised comments, and the system will give appropriate feedback online.

3.2 Data Collection

For the content of this research, the author adopted the research methods of two tests before and after the experiment, questionnaire survey and semi-open interview, and the research data was analyzed using SPSS19.0 software. The data used in this study come from the writing process records provided by the Pigai system, questionnaires and interviews with students after the experiment. After the deadline of each online independent writing task, the author of this article will analyze all the writing process data of pigai.com, including the vocabulary richness, vocabulary difficulty, clause density, average sentence length, spelling accuracy, and grammar of each composition. The accuracy rate, average word length, article length, number of paragraphs and total score, etc., are analyzed using SPSS19.0 software. All data collection has the permission of the students.

After completing four writing tasks, the researchers conducted a questionnaire survey on the online teaching platform to find out their recognition of the new mode of English writing teaching, and to investigate the teaching effect of the new mode of English writing teaching. The questionnaire consists of 9 closed-ended and 3 open-ended questions. A total of 175 people filled out the questionnaire and 175 copies were returned. The design of the questionnaire refers to the design of^[22] the statistics using a 5-level scale, ranging from “very dissatisfied” to “very satisfied”. The higher the score, the higher the degree of

recognition of the teaching method by students. On the contrary, the lower. In addition, the researchers conducted semi-open interviews with 20 test students (5 in each class).

3.3 Data Analysis

For quantitative data, all 175 students' different manuscripts from four writing tasks were derived from Pigai.com. The machine evaluation adopts the vocabulary richness, vocabulary difficulty, clause density, average sentence length, spelling accuracy rate, and grammatical accuracy rate of students' articles. Average word length, article length, number of paragraphs, total score and other parameters for measurement and comparison. Students' text quality is scored by writing the first draft and final draft respectively, and the SPSS 19.0 software is imported for data comparison and analysis, and the T test is used to compare whether there are significant differences between the scores. The questionnaires and interviews are summarized by themes and used for qualitative analysis after classification. As a supplement to quantitative analysis.

4. Research Results and Discussion

4.1 Impact on Students' English Writing Ability

The overall results of writing tasks 1 and 2, writing tasks 3 and 4 used the paired sample T test method to judge the difference in the improvement of students' performance between the pre-test and the post-test. The results are shown in Table 1. The results showed that there were significant differences between the two groups in the changes in the results of the pre-test and post-test (P values were 0.008, 0.004, respectively). It can be seen from Table 1 that the average score of task 2 is 1.44 points higher than that of task 1, and the average score of task 4 is 1.65 points higher than that of task 3. In terms of the standard deviation of the pre-test and post-test scores, both groups have a significant decline. Among them, tasks 3 and 4 have the largest decline (5.134), which indicates that students' writing proficiency among students after accepting the new mode of writing teaching The difference has narrowed. Therefore, Table 1 shows that when students study under the new writing teaching mode, their overall performance has improved, and the difference in writing level among students has decreased.

Use the paired sample T test method to test the analytical results of the pre-test and post-test, and use the SPSS 19.0 software to process the data. The analysis results of tasks 1 and 2 are shown in Table 2, and the analysis results of tasks 3 and 4 are shown in Table 3.

From Table 2 and Table 3, it can be seen that under the

influence of the new writing teaching model, all aspects in the two groups of tasks 2 and 4 are higher than the data in tasks 1 and 3 respectively, and similar trends appear. The average sentence length ($t=0.956$; $t=0.943$) and the length of the article ($t=-0.083$; $t=-0.078$) have significant changes, with significant statistical significance, indicating that under the double feedback of teacher evaluation and peer evaluation, students have expanded their writing thinking and enriched The writing materials have been improved, and the quality of writing has been improved. In terms of spelling accuracy rate ($t=-3.245$; $t=-3.313$) and grammatical accuracy rate ($t=-2.478$; $t=-2.348$), there is no obvious difference between the two groups of tasks, which shows that Juku.com provides immediate feedback during the submission process. The content has prompted students to make changes, and the details are often ignored in peer reviews. Synthesizing the data in Table 1-3, the intelligent composition correction system and the "teacher-student cooperation" evaluation system are organically integrated, which effectively improves the quality of students' writing.

Table 1. T-test results of paired samples for overall performance of pre-test and post-test

performance of pre-test and post-test	Average	Standard deviation	T value	P value
Pre-test (task 1)	82.30	5.53	3.246	0.008
Post test (task 2)	83.74	4.51		
Pre-test (task 3)	86.52	4.21	5.134	0.004
Post test (task 4)	88.17	4.03		

4.2 Students' Attitudes towards the New Writing Teaching Model

One week after the practice of the new teaching model, this study conducted a questionnaire survey and semi-open interviews on the impact of the intelligent correction system and teacher-student cooperative evaluation of the English writing teaching model on students' English writing. The results of the questionnaire survey are shown in Table 4.

In the questionnaire survey, the proportion of students who chose "satisfied" and "very satisfied" both reached more than 66.22%, and the number of students who chose "unsatisfied" or "very dissatisfied" was relatively small. Specifically, the subjective attitude of students' English writing has changed from the following aspects:

(1) The input before writing contributes to making English writing goals clearer. Through the reading input of the same subject and the teacher's classroom explanation and sample analysis, students can clarify the vocabulary, phrases, sentence patterns and structure used in the

Table 2. Paired-sample T-test results of analytical scores before and after tasks 1 and 2

Scoring items	Pre-test results (Task 1)	Post-test results (Task 2)	T value	P value
Vocabulary richness	6.43	6.56	0.165	0.833
Vocabulary difficulty	5.39	5.45	-0.579	0.588
Clause density	1.14	1.19	0.147	0.823
Average sentence length	16.21	16.31	0.956	0.042
Spelling accuracy rate	0.997	0.998	-3.245	0.692
Grammatically correct rate	0.912	0.919	-2.478	0.742
Average word length	4.27	4.31	0.166	0.788
Article length	275.42	325.36	-0.083	0.038
Number of paragraphs	5.16	5.35	0.256	0.731

Table 3. Paired-sample T-test results of the analytical results of pre-test and post-test for tasks 3 and 4

Scoring items	Pre-test results (Task 3)	Post-test results (Task 4)	T value	P value
Vocabulary richness	5.657	5.85	0.173	0.865
Vocabulary difficulty	5.28	5.55	-0.632	0.541
Clause density	0.96	1.07	0.194	0.846
Average sentence length	19.70	20.72	0.943	0.044
Spelling accuracy rate	0.997	0.998	-3.313	0.672
Grammatically correct rate	0.902	0.913	-2.348	0.661
Average word length	4.55	4.78	0.175	0.763
Article length	245.67	284.77	-0.078	0.041
Number of paragraphs	4.44	4.61	0.247	0.742

Table 4. Questionnaire survey of English writing learning motivation

	The influence of reading input on my clear writing elements	The influence of teacher’s classroom explanation and sample essay analysis on my writing	Juku.com automatic reviews help me	The teacher’s common evaluation of writing helped me	Peer reviews help me
Very satisfied	28.38%	33.33%	20.27%	45.50%	16.67%
Satisfied	61.71%	61.72%	45.95%	50.90%	49.55%
General	9.91%	4.95%	31.53%	3.15%	28.83%
Dissatisfied	0	0	2.25%	0.45%	4.50%
Very dissatisfied	0	0	0	0	0.45%

writing of the subject, so that the students can clarify the content covered by the subject writing, and expand the thinking of students’ writing. All students expressed their recognition of the role of input facilitating part. Among them, classmate Wang believes that “the new teaching model has allowed me to learn some writing skills, and I have been exposed to more topics. I know that I should use advanced vocabulary as much as possible when writing, and my expression should be diversified. At the same time, I also learned about the structure and content of different topics. What is it, and more importantly, it has improved my writing level. I have a better understanding of writing knowledge, but I still can’t use advanced vocabulary well when writing. The expression of the subject is still too single, and the overall level of composition is not high, not very good at using clauses, lack of highlights,

this part needs to be improved”.

(2) Intelligence and teacher feedback have increased students’ interest in English writing. More than 66.22% of the students expressed satisfaction with the instant feedback from Juku. However, some students still believed that the intelligent instant evaluation system did not meet their expectations, and the corresponding teachers’ evaluations of common problems were obtained. Students’ high recognition and satisfaction reached 96.40%, which is consistent with the previous research results of others. Compared with the intelligent Juku Piangai.com, Chinese students recognize the authority of teachers more. The results further prove that teacher-student collaborative evaluation plays an indispensable role in English writing teaching. Student Zhang believes that “Juku.com is helpful for improving vocabulary and optimizing grammar,

but disagrees with some of the machine reviews”; Student Zheng believes that “Juku.com allows me to find errors in writing and correct them in time. In addition, machine reviews You can comment sentence by sentence, very meticulous”; “Pigai.com’s instant feedback plus teacher comments, so that I can clearly understand the problems that arise in my writing,” said classmate Wan.

(3) Student mutual evaluation greatly improves students’ sense of achievement in English writing. In the process of teacher-student cooperative evaluation, students play both the role of readers and teachers, and they can objectively understand their own article structure and language deficiencies. The process of continuous improvement of grades in revision has enabled students to gain a stronger sense of accomplishment and satisfaction in writing. As Student Cai said in the interview, “Compared to machine feedback, students’ mutual evaluation is more humane. For example, he will patiently point out where the error is, and will help you correct it, and even one problem can be extended to other problems. Which allows me to better find errors and areas that need correction; through the mutual evaluation of students, I found that the areas that I still need to improve are grammatical problems, because grammatical errors always occur.”

5. Conclusions

Through this teaching practice research, the application of the integration of intelligent review system and teacher-student cooperative evaluation in college English writing teaching has positive significance for the improvement of students’ English writing ability, learning motivation and self-efficacy.

In the teaching practice process and the follow-up questionnaires and semi-open interviews, this research also found some shortcomings in the integration of the intelligent correction system and teacher-student cooperative evaluation. As far as Juku.com is concerned, whether it is closely related to the theme, the structure of the article, Whether the logic is reasonable and other aspects cannot be correctly assessed. Some students still have a certain degree of distrust or even resistance to the online instant feedback of the intelligent correction system. As far as teacher-student cooperative evaluation is concerned, the following points should be paid attention to in teaching practice: the choice of reading input materials is very important; peer evaluation training is the cornerstone of ensuring the quality of peer evaluation; output task setting is a difficult point, and new teaching needs to be changed. The specific requirements of each teaching link in the model are accurate.

There are also shortcomings in this experiment. First of

all, the research object of this research is the freshmen of the university. The university implements graded college English teaching. They are all A-level students with a score of 110 or more in the college entrance examination. Therefore, there is little difference in the level of students in the college entrance examination and cannot represent other colleges or other students. Secondly, due to time constraints, the task workload was only arranged for four writings, and the number of samples has certain limitations. Therefore, the general validity of the results of this study needs to be further demonstrated by subsequent studies.

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