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Exploring the Computer-Assisted Teaching Mode for Cultivating Intercultural Communication Skills in English Classrooms of Colleges and Universities

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Abstract Today in the context of globalization, English, as a universal language, has a stronger and stronger spark of cultural collision with other countries, and the cultivation of students' intercultural communicative competence is particularly important. Through the theoretical analysis of the dilemma of English classroom teaching, it leads to the current problems in the cultivation of students' intercultural communicative competence. In this regard, this paper designs a computer-assisted English teaching model based on intercultural communication from six different dimensions. In order to test the actual performance of the teaching model, independent samples t-test was used to analyze the differences. After the experiment, there are significant differences between the control group and the experimental group in the three dimensions of voice intonation, free dialog, and looking at pictures and speaking ($P < 0.05$), which means that compared with the traditional teaching mode, the teaching mode of this paper is more favorable to the cultivation of students' intercultural communication skills.

Index Terms independent sample t-test, intercultural, communicative competence, computer, English teaching mode

I. Introduction

With the acceleration of globalization, it is very important to cultivate intercultural communicative competence in the process of teaching English in colleges and universities [1], [2]. At present, English teaching in colleges and universities has made certain innovations and improvements in both teaching methods and contents, but in the face of the accelerating globalization process, the cultivation of intercultural communicative competence in college and university English classrooms is not optimistic, and there still exist some problems that need to be solved urgently, with the rapid development of computer technology, computer-assisted teaching plays an important role in the cultivation of intercultural communicative competence in college and university English classrooms [3]-[6].

Computer-assisted teaching refers to the use of computer technology and software to assist teachers in teaching activities, in order to improve the teaching effect and learning experience [7], [8]. In English education in colleges and universities, computer-assisted teaching can be applied in a variety of ways, such as teaching software, online courses, electronic teaching materials, etc., which has a broad application prospect in the cultivation of intercultural communicative competence [9]-[11]. By providing multimedia learning resources, personalized learning experiences, interactive learning environments and instant feedback assessment, computer-assisted teaching can improve the learning effect and stimulate students' enthusiasm and autonomy in learning English intercultural communication [12]-[14]. However, to fully utilize the advantages of computer-assisted teaching, it is necessary for universities to provide the necessary technical and resource support and strengthen the training and guidance for teachers and students [15], [16]. At the same time, students also need to have good independent learning ability to adapt to the requirements of computer-assisted teaching [17]. Only by fully realizing the potentials and challenges of computer-assisted teaching and taking corresponding measures can we better promote the development of English intercultural communicative competence cultivation in colleges and universities [18], [19].

This paper aims at the dilemma of English classroom teaching in colleges and universities, and designs a computer-assisted English teaching model based on cross-cultural communication from the six dimensions of teaching objectives, teaching content, teaching methods, curriculum, English teaching materials, and English teachers. Research subjects were selected, and a research program for the validation and analysis of the English teaching model was developed according to the research objectives and methods. Under the joint effect of research data and independent samples t-test, the two English teaching modes of voice intonation, free conversation, and looking at pictures and speaking were compared and analyzed, aiming at verifying that the teaching mode in this

paper can accelerate the speed of cultivating students' intercultural communicative competence in colleges and universities.

II. Computer-assisted teaching model based on the development of communicative competence

II. A. Communicative competence development and teaching dilemmas

II. A. 1) The necessity of cultivating intercultural communication skills

In the past, the demand for talents in the international market has gradually increased, which puts forward new requirements and challenges for English teaching, so it is particularly important to actively cultivate cross-cultural communication skills in English teaching in colleges and universities [20], [21]. Cultivating students' intercultural communicative competence helps us to break the previous language teaching mode, integrate the international communication factors into the actual teaching, and take the history behind the language and the cultural differences that are prone to cause conflicts into consideration in the implementation of English teaching. This teaching method is more conducive to the students' mastery of grammar and semantics, as well as the in-depth consideration of the social and cultural background. At the same time, the cultivation of cross-cultural communication skills enables students to better deal with the relationship between language and culture. Language and culture are inseparable parts of each other, and they complement and influence each other. Language is an important carrier of culture and an important form of cultural expression. The construction of language contains certain cultural factors and connotations, the use of language must follow the cultural treaty, so as to promote people of different cultural backgrounds in the process of interaction more smoothly, reduce the occurrence of misunderstandings, so it can be said that actively cultivate students' cross-cultural communication skills is very important.

II. A. 2) The Dilemma of Teaching English Intercultural Communication

At the present stage, there are certain deficiencies and problems in the process of English teaching in colleges and universities. Teachers' teaching focus is still placed on students' English vocabulary and grammar teaching, and they do not really pay attention to the cultivation of students' cross-cultural communicative competence, which leads to the difficulty in practicing students' English communicative competence and also affects the improvement of students' English oral expression ability. In the face of such a teaching dilemma, it is very important for colleges and universities to actively cultivate students' English oral communication skills [22]. As schools and teachers must create a good oral communication environment for students, allowing students to independently carry out oral English practice, while some schools with the conditions can also hire some foreign teachers for students to support teaching, so that students can be in a better language environment for language learning, so that students can understand more of the background of the knowledge of English, so as to achieve competence improvement on the basis of the mastery of English knowledge. In this way, students can learn more about the background of English knowledge, so that they can improve their ability on the basis of mastering English knowledge, and create better conditions for their English communication ability and future comprehensive quality development.

II. B. English Teaching Model Based on Intercultural Communication

Based on the results of the above theoretical analysis, this subsection will construct the teaching model of college English under intercultural communication in terms of teaching objectives, teaching contents, teaching methods, curriculum, teaching materials and teachers. The details of the teaching model are designed as follows:

II. B. 1) Teaching objectives

Constructing the objectives of university English teaching based on intercultural communication. University English teaching based on intercultural communication should focus on cultivating students' language ability as well as improving students' intercultural communication ability. Therefore, the objectives of university English teaching based on intercultural communication mainly include two aspects: first, to cultivate students' comprehensive English ability in listening, speaking, reading and writing; second, to cultivate students' intercultural thinking and communicative ability, cultural emotional ability and intercultural behavioral ability.

II. B. 2) Teaching content

According to the objectives of university English teaching based on intercultural communication, the content of university English teaching based on intercultural communication can be divided into two aspects: English basic teaching and English culture teaching. Basic English teaching includes language knowledge such as vocabulary, phonology, grammar, language function and language skills such as listening, reading, writing and speaking. English culture teaching includes cross-cultural communication methods and methods as well as humanistic knowledge of English.



II. B. 3) Teaching methods

Choose a teaching method that combines cultural instruction with language instruction. Incultation method - to give cultural explanations and input cultural knowledge to students. Comparison method - comparing cultural differences, especially mobilizing students to discover cultural differences and understand them, which is the basic method of intercultural teaching. Experiential method - focusing on experiential teaching, activity teaching, situational teaching, creating conditions for students to enter cultural situations and experience cultural roles, combined with the use of audio-video-photographs and so on.

II. B. 4) Curriculum

Optimize the curriculum of university English based on intercultural communication. According to the objectives of college English teaching based on intercultural communication, college English courses can be divided into two categories, namely, English basic courses and intercultural communication courses. When setting English basic courses, in addition to the regular English courses, we can also utilize the new media of the Internet to allow students to participate in some online courses independently, so as to improve the efficiency of students' English knowledge learning. When setting up cross-cultural communication courses, the combination of elective courses and compulsory courses can be used to offer English humanities and history courses, and combined with the students' specialties, relevant professional English application courses can be offered. Integrate cross-cultural communication into the whole English learning process of students and cultivate their comprehensive English quality.

II. B. 5) English language teaching materials

Different teaching materials are chosen according to the teaching objectives of college English based on intercultural communication, so the selection of college English teaching materials based on intercultural communication can also be divided into two categories: basic course materials and intercultural communication materials. Teachers can choose basic course materials according to the actual teaching situation and the students' condition, such as "Advanced English for University" and "New Vision College English". When choosing intercultural communication textbooks, teachers can select those that cover the systematic theory of intercultural communication, and at the same time, they can also encourage teachers to actively develop new textbooks reflecting intercultural communication on the basis of borrowing excellent English textbooks from foreign countries and combining them with English teaching.

II. B. 6) English teachers

In order to adapt to the quality requirements of the new language and culture teaching the new language and culture type of university English teaching puts forward new requirements on the English teachers' cultural awareness, cultural knowledge, cultural literacy, cultural comparative vision, cultural communicative ability and so on. It requires teachers not only to improve their own cultural literacy and cross-cultural communication ability, but also to understand the new language and culture teaching concept, master the language and culture teaching methods, and try to realize the organic combination of language teaching and culture teaching.

III. Study design

III. A. Purpose of the study

The curriculum standard points out: "To change the English curriculum over-emphasizing the explanation and teaching of grammar and vocabulary and neglecting the cultivation of the students' ability to use the actual language, we should emphasize that the curriculum starts from the students' life experience, advocate the learning mode of experience, participation, learning cooperation and communication and the task-based teaching pathway, and develop the students' ability to use the language in the middle and in the middle. In theory, to build a computer-assisted English teaching model based on the cultivation of communicative competence, to explore the specific ways to develop the life resources of the English curriculum, to improve the students' learning styles, and to improve their oral expression ability. To improve students' oral communication ability in practice. In practice, to make the process of research on the subject a process of improving students' practical language use ability, and at the same time a process of cultivating their sentiment, expanding their horizons, enriching their life experience, developing their personality and improving their humanistic qualities.

III. B. Research methodology

This topic is a research topic combining practice and application, and its process is: research - practice - reflection - re-practice - re-study. Spiral structure, a virtuous cycle of continuous adjustment, optimization, and improvement. The main methods are:

III. B. 1) Literature analysis method

To carry out comparative research on intelligence information from multiple fields and dimensions, to grasp domestic and international research methods, to draw on existing research results and lessons learned, to find new growth points, to prevent repetitive research, to avoid and take fewer detours, and to provide a theoretical framework and methodology for research on the subject.

III. B. 2) Lessons learned approach

Through consulting various theoretical works and research materials, adhering to the combination of theory and practice, constantly summarizing the research results, conducting stage-by-stage summary, adjusting and improving the research program.

III. B. 3) Teaching experiment method

According to the purpose of teaching research, tight control of certain conditions that have nothing to do with the experimental factors, systematic manipulation or change of the experimental factors, based on observation, recording, measurement and experimental factors associated with the phenomenon of change, in order to determine the cause and effect relationship between things a research method.

(1) Research Subjects

Fifty students were selected from the first to the third grades of our university for the experiment, divided into the control group (traditional English teaching mode) and the experimental group (computer-assisted teaching mode based on intercultural communicative competence), and taught by the same English teacher.

(2) Variable Setting

This experiment will adopt the teaching experiment method, firstly, the pre-test of English oral communicative competence will be conducted for all the experimental subjects, then different teaching methods will be adopted for the subjects in the experimental group and the control group, and then the post-test will be conducted to examine the effect of different teaching methods on English oral communicative competence. The details are as follows:

a) Independent variables

Teaching method (traditional teaching/teaching in this paper). In the experimental group by implementing the teaching and research program of the teaching and research group, English oral teaching was conducted according to the teaching method of this paper. The control class was taught according to the conventional English teaching method.

b) Dependent Variable

Students' English oral communication skills, including the three aspects of voice intonation, free conversation, and looking at pictures.

c) Control of irrelevant variables

There is no significant difference in teachers' quality and teaching ability, and the experimental subjects' oral English communicative competence is roughly similar before the formal experiment is conducted; neither the experimental group nor the control class can arbitrarily work overtime and extend the school hours. The control class does not take unconventional measures, does not eliminate poor students, and does not implement another English teaching method.

(3) Acquisition of test data

The experimental group and the control group are given oral tests by the same teacher, the contents of which are taken from the texts the students have already studied. Phonological intonation: being able to make sentences fluently (26~30 points), being able to say similar words (11~25 points), being able to read words (0~10 points). Free conversation: can answer questions fluently (16-20 points), cannot answer very fluently or cannot answer completely (11-15 points), very poorly or cannot communicate (0-10 points). Look at the picture and speak: can look at the picture and express the meaning of the picture fluently and completely (41-50 points), need to describe the meaning of the picture with the teacher's prompting (21-40), can't say the meaning of the picture fluently with more errors (0-20).

(4) Data Statistics

For the obtained experimental results, SPSS17.0 statistical software was used to conduct independent samples t-test by determining whether the P-value satisfies the condition of significant difference [23], [24]. If the condition of significance is satisfied, it means that the computer-assisted English teaching model based on intercultural communicative competence has excellent performance performance.

IV. Analysis of the differentiation of teaching models

IV. A. Variability analysis of intonation

IV. A. 1) Pre-experimental variability analysis

According to the data of the pre-test, the overall analysis of the students' intonation level in the experimental group and the control group was firstly compared to confirm whether there is a significant difference between the overall intonation level of the experimental group and the control group in the pre-test, and the results of the analysis of the differences between the control group and the experimental group before the experiment are shown in Fig. 1, in which the EG and the CG denote the experimental group and the control group, respectively. As can be seen from Figure 1, the number of subject students in the experimental and control groups participating in the pre-test was 25 respectively, and the overall mean level of students' intonation of voice in the experimental group was 19.66 with a standard deviation of 1.23. The overall mean level of raw intonation in the control group was 19.27 with a standard deviation of 1.67. It seems that there is not much difference in the size of the two groups' values, but in order to determine whether this difference is a sampling error or a systematic error, and whether there is a significant difference in the overall level of the two groups, we have to look specifically at the results of the T-test. The P-value of students' speech intonation level between the experimental group and the control group before the experiment is 0.174, and since the system defaults to a significance level of 0.05 and the P-value is greater than 0.05, it can be judged that there is no significant difference between the two groups before the experiment, which is a good guarantee of the validity of the results of the study.

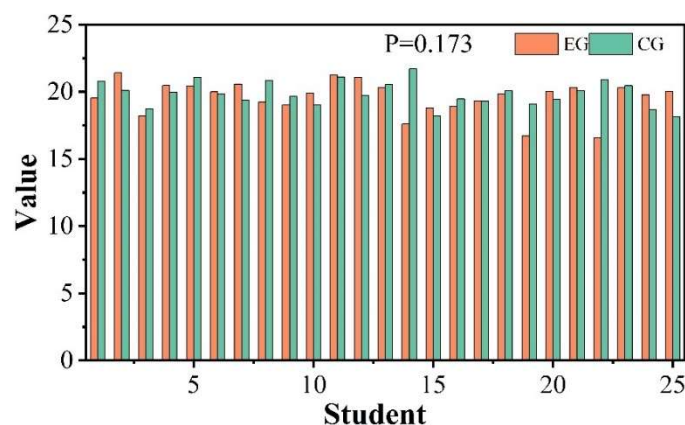


Figure 1: Difference analysis between the CG and the EG before the experiment

IV. A. 2) Post-experimental analysis of variance

The experimental group received the author's cultural teaching of English-speaking countries in combination with the content of the textbook throughout one semester, i.e., eighteen weeks of public English study. At the end of the semester at the end of December, the experimental group and the control group of subjected students were tested for voice intonation again, with the purpose of analyzing whether, after one semester of integration of the cultural teaching, the experimental group of students and the control group of students had occurred significant in the level of voice intonation difference. Again, as in the pre-test, an independent samples t-test was conducted on the intonation levels of the control group and the experimental group after the experiment, and the analysis of the differences in the intonation levels of the control group and the experimental group after the experiment is shown in Figure 2. The overall mean level of students' voice intonation in the experimental group was 26.88, with a standard deviation of 2.72 and a standard error of 1.72, while the overall mean level of students' voice intonation in the control group was 20.47, with a standard deviation of 2.66 and a standard error of 1.45. As shown in this data, the overall level of the two groups has a significant change in numerical value compared to the pre-test, and the overall mean of the water value of the voice intonation in the experimental group has improved compared to that in the pre-test. At the time of the test, however, the students' level of speech intonation in the control group has improved a lot compared to the pre-test, while the difference between the two groups' overall water averages at the time of the post-test has relatively increased from the data. Based on the P-value of the two after the experiment, it can be seen that there is a significant difference between the experimental group and the control group in students' voice intonation after the experiment, which proves that the teaching mode of this paper promotes students' voice intonation.

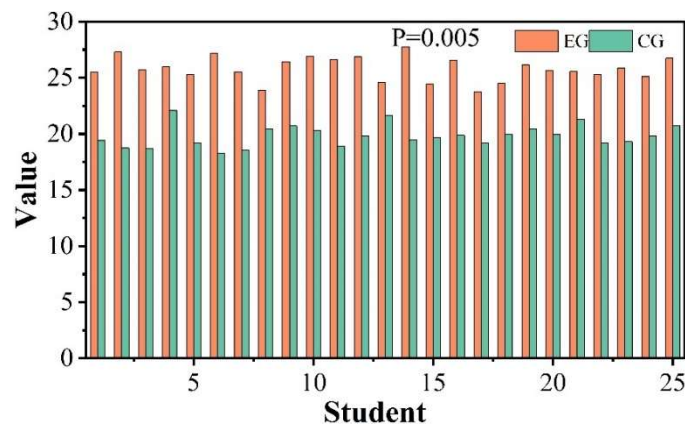


Figure 2: Difference analysis after the experiment

IV. B. Analysis of the variability of the Free Dialogue

IV. B. 1) Analysis of within-group variability

(1) Control group

Through the English content test in the previous section, the data of intra-group variability analysis before and after the experiment of students' free conversation were obtained. After obtaining the research data, with the help of SPSS17.0 statistical analysis software, the level of free conversation of students in the control group before and after the experiment was analyzed differently, and the results of the differentiation analysis of the control group before and after the experiment are shown in Figure 3. Through the numerical performance in the figure, it can be seen that after a period of teaching intervention, it is found that the English free conversation level of the students in the control group has been improved to a certain extent, and the enhancement is less, combined with the P-value in the figure, it shows that there is no significant difference in the English free conversation level of the students in the control group before and after the experiment.

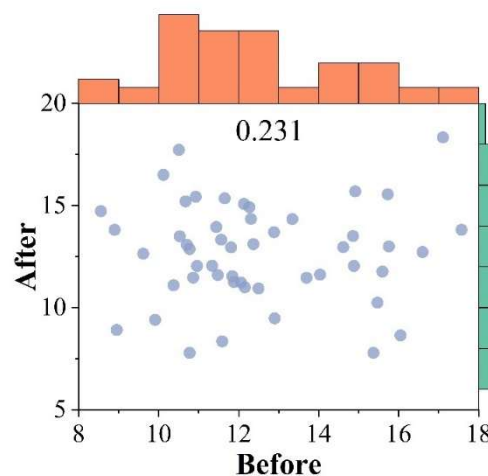


Figure 3: The results of the difference analysis of the CG before and after the experiment

(2) Experimental group

Adopting the same method as above, the independent sample t-test is conducted on the free conversation level of the students in the experimental group, and the results of the independent sample t-test are shown in Figure 4. Based on the numerical performance in the figure, it can be seen that under the effect of the computer-assisted English teaching mode based on the cultivation of intercultural communication ability, the students' English free conversation level is significantly improved, and there is a significant difference between the two ($P=0.007<0.05$), which well verifies the practical application value of the English teaching mode in this paper.

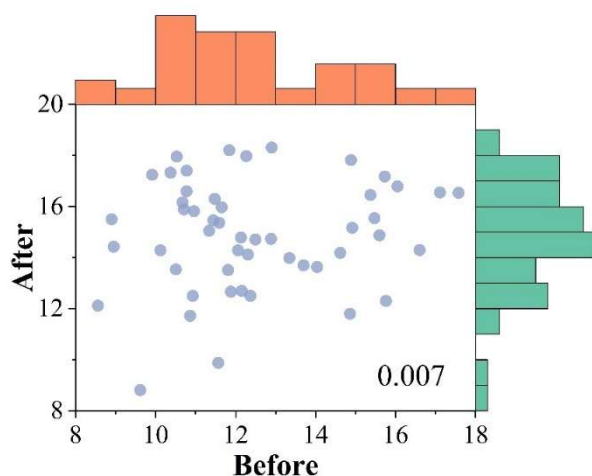


Figure 4: Independent sample t-test results

IV. B. 2) Out-of-group variability analysis

(1) Before intervention

With the support of SPSS17.0 statistical analysis software, the level of students' free conversation in the control group and the experimental group before the experiment was analyzed for differences, and the results of the analysis of differences between the two groups before the experiment are shown in Figure 5. The mean and standard deviation of the experimental group are slightly higher than that of the control group, $t=-0.314$, $P=0.083>0.05$, which shows that there is no significant difference between the two groups for the students' free conversation level before the experimental teaching.

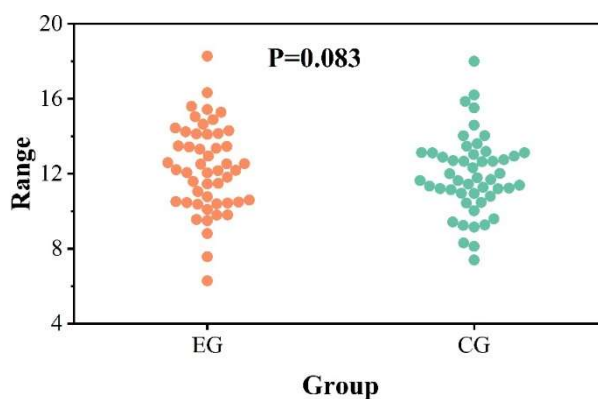


Figure 5: Difference analysis of the two groups before the experiment

(2) Post-intervention

At the end of the post-test, the authors similarly performed t-tests on the scores of the control and experimental groups, and the results of the post-intervention independent samples t-test are shown in Figure 6. As can be seen from Figure 6, the mean value of the experimental group (17.35) is significantly higher than that of the control group (13.88), while the standard deviation of the experimental group (2.121) is slightly lower than that of the control group (2.371), $t=-6.956$, $P=0.009<0.05$. It can be seen that after the experimental teaching, there is a significant difference between the test scores of the experimental group and those of the control group, and in comparison with the traditional English teaching mode, the English teaching mode designed in this paper has higher superiority in students' English free conversation.

IV. C. Analysis of Differences in Looking at Pictures

IV. C. 1) Pre-intervention comparative analysis

The pre-intervention research data of the experimental group and the control group were obtained through the test of oral communicative competence in English, and the research data were subjected to independent samples t-test using SPSS17.0 software, and the results of the independent samples t-test are shown in Figure 7. The mean value

of the pre-test of the experimental group and the control group, the difference is less than 1 point. The difference in the mean value of each one-way score is less than 0.5 points. The preliminary conclusion is that the difference between the students' ability to read and speak in the experimental group and the control group is very small and almost at the same level. In the independent samples t-test, the significance $P = 0.464 > 0.05$ and 95% confidence interval includes 0. Therefore, the pretest means of the experimental group and the control group, there is no significant difference.

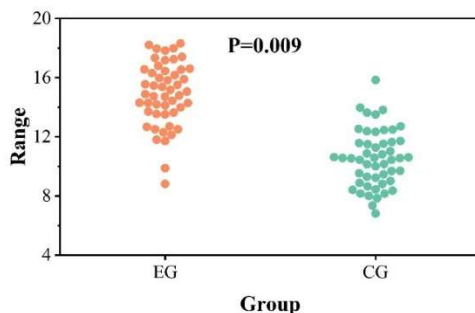


Figure 6: The t-test results of independent samples after the intervention

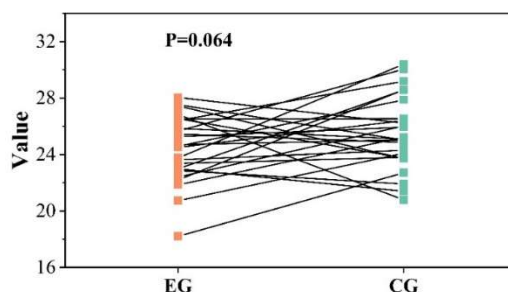


Figure 7: Independent sample t-test results

IV. C. 2) Comparative post-intervention analysis

This subsection takes the same method as above to analyze the difference between the experimental group and the control group's ability to look at pictures and speak after the intervention, and the results of the difference test analysis are shown in Figure 8. The mean value of the experimental group's ability to look at pictures and speak, is approximately 10 points higher than the control group. During the independent samples t-test, $P=0.001 < 0.05$, so it can be inferred that there is a significant difference between the experimental group and the control group after the teaching intervention. After a semester of experimental intervention of computer-assisted English teaching mode, about the experimental group of students' English reading and speaking can read rose more than 60%, the most obvious rise, on the contrary, the traditional teaching mode enhancement is very small. In summary, compared with the traditional English teaching mode, the computer-assisted teaching mode based on the cultivation of intercultural communication ability is more suitable for the cultivation goal of talents in colleges and universities in the new era.

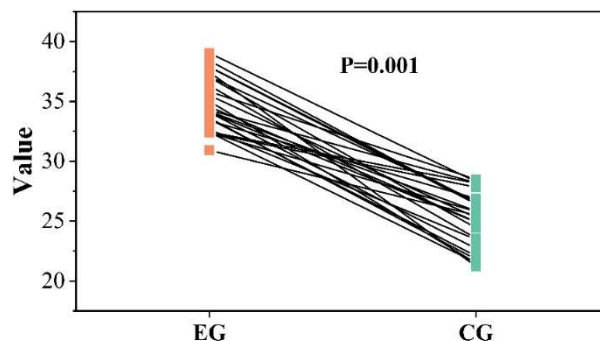


Figure 8: Difference test and analysis results

V. Conclusion

Aiming at the problems of cultivating intercultural communicative competence in English classrooms of colleges and universities, a computer-assisted English teaching model based on the cultivation of intercultural communicative competence is formulated from six dimensions. In order to test the actual classroom performance effect of the teaching mode in this paper, a corresponding teaching mode effect validation research program is designed, under the guidance of which the application value of the teaching mode in this paper is analyzed differently from three different directions. After a period of teaching intervention, it is found that the experimental group and the control group have significant differences in voice intonation, free dialogue, and looking at pictures and speaking, which can be summarized that compared with the traditional teaching mode, the computer-assisted English teaching mode based on the cultivation of cross-cultural communicative competence has superiority, and it has a facilitating effect on the cultivation of students' cross-cultural communicative competence.

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