





A Grey Correlation Assessment Method for English Interpretation Teaching Incorporating Multivariate Analysis Ideas

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Abstract. English interpretation class is a core skill class for English majors, and its goal is to cultivate students' professionalism in interpretation and two-way interpretation ability. Teaching evaluation is an indispensable part of English interpretation teaching, which is a teaching activity to objectively analyze and summarize the teaching content, process and results. It includes the evaluation of students' learning outcomes and the evaluation of teachers' educational outcomes. Teaching evaluation plays many positive roles and its importance is self-evident. In order to evaluate the quality of English interpretation teaching in colleges and universities with high standards, this paper proposes a gray correlation assessment method for English interpretation teaching that integrates the idea of multivariate analysis. The method introduces the idea of multivariate analysis to address the complex diversity of factors affecting English interpretation teaching. The model follows the optimal data clustering criterion to obtain the evaluation indexes of the quality of English interpretation teaching in colleges and universities. The relationship between the correlation degree and the evaluation level was analyzed using gray correlation. Then, the evaluation of the quality of English interpretation teaching in colleges and universities is realized by determining the level of strengths and weaknesses of the quality of English interpretation teaching in colleges and universities. Finally, the proposed evaluation method is used to integrate the expert evaluation and student evaluation, and the relationship between the factors of English interpretation teaching quality evaluation is presented to provide a basis for improving English interpretation teaching, forming a virtuous cycle of "teaching-evaluation-correction". The proposed method was analyzed and validated in two teaching semesters of the English interpretation course. The effectiveness and superiority of the proposed method were confirmed in three aspects, including quality factor analysis, student evaluation effects, and learning effects, which contributed to the improvement of the quality of English interpretation teaching.

Keywords: English interpretation, multivariate analysis, gray correlation, evaluation index, clustering criterion

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1 INTRODUCTION

In the context of globalization, cultural diversity and the mutual collision and intersection of various values easily lead to confusion, conflict and confrontation of values, which put higher requirements on interpreters [11]. As a social activity of cross-cultural communication, interpretation plays an active role in spreading Chinese culture and promoting mutual appreciation of civilizations. How to combine the characteristics of foreign language disciplines and the law of interpretation teaching to achieve the resonance of value leading, knowledge transfer and ability enhancement is an urgent problem of interpretation teaching. Interpretation class is the core skill class of English majors [10]. The traditional teaching mode of interpretation focuses on skill cultivation, and value education has not been fully emphasized and explored. First of all, the professional standard of interpreters requires interpreters to remain as neutral as possible when interpreting output, faithfully expressing the speaker's meaning and not mixing with personal opinions [1]. Therefore, there is little discussion of the original speaker's viewpoint in the interpretation classroom, and there is a lack of arguments, questions and criticism about the issues of truth, goodness and beauty and values. Secondly, interpretation skills require a lot of practice and practice to become proficient, especially the difficulty of allocating and coordinating energy between mental note taking and note-taking in the process of interpretation. This tends to cause a lot of teaching activities to be carried out at the lower level of "memorization" and "understanding", resulting in a lack of emotional communication and a lack of systematic training and improvement of thinking skills [9]. The goal of the interpretation course is to cultivate students' professionalism in interpretation and two-way interpretation ability. The interpreter should be as faithful as possible to the meaning of the original text, and should not add, subtract or create arbitrarily, which is "seeking truth" [7]. The interpreter should present the original meaning in the translated language in an authentic way to produce the same effect in the audience of the translated language as the audience of the original language, and build a bridge between the two cultures. In the whole process of work, interpreters should always maintain a high degree of professionalism and appropriate speech and behavior, and complete the interpretation task with accurate cross-cultural understanding, excellent cross-linguistic skills, and fluent and comfortable bilingual expressions, which is "seeking beauty"[19].

Based on the guidance of multiple intelligence theory and humanistic concept, the diversified teaching evaluation system adheres to the principles of scientificity, comprehensiveness, orientation, diversity of evaluation subjects and diversity of evaluation forms, and emphasizes the combination of process evaluation and summary evaluation, quantitative evaluation and qualitative evaluation [3]. The diversified evaluation system not only evaluates the results of the summary of teaching activities, but also emphasizes the evaluation of the course learning process. It not only evaluates students' development in cognitive aspects, but also in non-cognitive aspects such as their emotion, will, personality and character [20]. Diversified teaching evaluation will comprehensively evaluate students' English interpretation teaching effectiveness from different perspectives such as teachers, parents, peers and students themselves.

At present, many methods exist for evaluating the quality of English interpretation teaching, such as qualitative evaluation methods, quantitative evaluation methods, evaluation methods that integrate quantitative and qualitative, and so on [15]. For example, the traditional method of specifying factor relationships by experts. However, this method can hardly exclude subjectivity and randomness, and has a set-in-stone nature. This ignores the mutual influence of factors and their changing characteristics with time, and it can no longer adapt to the requirements of updating the

quality evaluation of teaching [14]. At present, the data of the studies are static and lagging, failing to analyze and revise the relationships among the factors of English interpretation teaching quality in a timely manner in combination with real-time and dynamic evaluations. Moreover, most of these studies are qualitative analyses, while there are relatively few quantitative analyses [13]. At the same time, the "student-centered" feature is not highlighted in the improvement of teaching quality, and students' evaluation is not given sufficient attention, which makes the improvement of English interpretation teaching quality one-sided. Therefore, it is an important issue to improve the quality of English interpretation teaching to obtain the relationship between various factors based on data-driven technology and use it as a basis to correct and improve the teaching process [26].

All of the above evaluation methods have their own unique evaluation advantages and scope of use, but in the detailed application process, reasonable evaluation methods need to be selected according to the assessment objectives and the real needs of the assessment [16]. Aiming at the characteristics of mutual promotion and constraints among various factors of English interpretation teaching quality, this paper introduces the idea of multivariate analysis [6] and proposes a gray correlation assessment method for English interpretation teaching that integrates the idea of multivariate analysis. The gray correlation analysis method belongs to the evaluation method that integrates qualitative and quantitative, and takes the gray system with incomplete and clear information as the research target [25]. The method constructs a multi-factor evaluation system based on expert evaluation, centered on student evaluation, and based on English interpretation teaching data. It also constructs a learning mechanism based on expert designation and evaluation respectively to obtain the relationship of each factor in a timely and accurate manner and make corrections and updates to precisely analyze the relationship between the factors of teaching quality and provide guidance for improving English interpretation teaching. The paper applies the proposed method to analyze and verify the actual teaching situation, in order to give full play to the advantages of multivariate analysis in the evaluation of educational quality. The results show that the proposed method for evaluating teaching is less complex in structure, less arithmetic, and does not have strict constraints on the number of evaluation samples, which makes it more applicable. For this reason, we use this method in the quality assessment of interpretation teaching in this paper. This can accurately evaluate the quality of interpretation teaching and exists to assist in the quality management of interpretation teaching.

The main innovation points of this paper are as follows.

- 1) Introducing the idea of multivariate analysis. The factors affecting the quality of English interpretation teaching are multifaceted, and this paper effectively solves the difficulty of revealing the primary and secondary effects and interactive influences of various influencing factors by only using univariate analysis, and improves the accuracy of evaluation by studying the relationship between multiple factors and teaching quality.

- 2) Introduction of clustering algorithm to screen evaluation indexes. The algorithm has a simple structure and a low amount of operations. This makes the efficiency of the evaluation method proposed in this paper more efficient.

- 3) Using hierarchical analysis to determine the initial weights of the relationships of evaluation indicators. This method can establish the hierarchy of all impact factors, clearly express their relationships, and simplify the evaluation procedure. For places where data are missing or insufficient, the importance of each factor can still be found.

This paper mainly consists of five parts, including the first introduction, the second state of the art, the third Methodology, the fourth experiment and analysis, and the fifth conclusion.

2 STATE OF THE ART

2.1 Hierarchical Analysis

The Analytic Hierarchy Process (AHP) is a method proposed to systematize, fuzzify, and quantify decision thinking about complex phenomena [8]. The method decomposes the elements related to the decision-making level into levels of objectives, criteria and scenarios, on the basis of which qualitative and quantitative analysis is carried out. It is widely used in the comparison of regional economic development programs, resource planning analysis and personnel quality assessment. To construct the system model and calculate the weights of each index using hierarchical analysis, there are four main steps as follows.

- 1) Build a hierarchical model.
- 2) Construct the judgment matrix. All the elements in the judgment matrix are given by Santy's scale of 1~9.
- 3) Hierarchical single ranking and consistency test. The maximum characteristic root of each judgment matrix and its corresponding eigenvector are calculated, and the judgment matrix is tested according to the consistency ratio calculation formula. If the average random consistency index is less than 0.1, it means that the judgment matrix meets the consistency requirement, and the normalized feature vector can be used as the weight. Otherwise, appropriate corrections need to be made to the scale of the judgment matrix.
- 4) Hierarchical total ranking and its consistency test. Hierarchical total ranking is to calculate the weight of the relative importance of a certain level element to the highest level, and if the value of this weight is less than 0.1, it passes the consistency test.

2.2 Teaching Quality Evaluation

Interpretation teaching is an important part of English major education, and improving and perfecting the quality of interpretation teaching has become one of the important tasks of English major education in colleges and universities. Building a sound, effective and accurate English interpretation teaching quality evaluation system is an important way and means to guarantee the quality of English interpretation teaching [12]. English interpretation teaching information is the basis of English interpretation teaching quality evaluation. It is especially important to deeply excavate and analyze English interpretation teaching data, use a combination of qualitative and quantitative methods to evaluate the quality of teaching in colleges and universities [17]. Due to the lack of real-time, sufficient, multi-faceted and whole-process teaching data, the traditional evaluation of teaching quality has limitations such as "lagging evaluation data, single evaluation basis and one-sided evaluation perspective". Nowadays, the rapid development of information technology and the existence of a large amount of data provide powerful data support for the improvement of teaching quality evaluation [22]. Therefore, we should make full use of English interpretation teaching evaluation information, center on students and rely on big data to realize a teaching quality evaluation system that covers all aspects of learning and teaching and the whole process. By deeply exploring the correlation between teaching quality factors, we can accurately "paint a picture" of teaching quality from different perspectives, so as to comprehensively promote development of English interpretation education [23].

3 METHODOLOGY

3.1 Determining the Assessment Indexes of Interpretation Teaching

The assessment model in this paper uses a clustering algorithm for assessment index selection [21]. Small differences among English interpretation teaching quality evaluation indicators are the prerequisite for optimal data clustering. The standard value interval for setting the clustering kinds of teaching quality evaluation indicators is f , which needs to be at the optimal value according to the optimal clustering requirement. f is usually set by experts as a way to be able to maximize the attributes of clustering results. The clustering deviation $\delta^2(I)$ among each evaluation indicator is as follows.

$$1. \quad \delta^2(I) = \frac{1}{t} \sum_{z=1}^t (i_t - \bar{i})^2 \quad (3.1)$$

Where \bar{i} is the mean value of the set I of evaluation index attributes, i.e., $\bar{i} = \frac{1}{t} \sum_{z=1}^t i_z$. This value is larger when the value difference between the evaluation index attributes in I is larger. Conversely, it means that the value approximation between evaluation indicator attributes in I is high. t is the number of indicators.

The error $\delta^2(I_x, \bar{I}_x)$ of the evaluation indicator clustering result x is equation (3.2).

$$\delta^2(I_x, \bar{I}_x) = \frac{1}{t} \sum_{z=1}^t (i_t - \bar{I}_x)^2 \quad (3.2)$$

The mean value of c clustering errors is equation (3.3).

$$\delta^2(I, \bar{I}) = \frac{\frac{1}{c} \sum_{x=1}^c \delta^2(I_x, \bar{I}_x)}{\xi^2(I)} \quad (3.3)$$

Where \bar{I}_x and $\delta^2(I, \bar{I})$ are the mean value of c clusters and the mean value of clustering close water respectively. A smaller value of $\delta^2(I, \bar{I})$ represents a smaller interval of c evaluation indicators. The value becomes larger when the interval of evaluation indicators becomes larger. This value can describe the clustering effect of clustering evaluation indicators. c inter-cluster distance mean value $D(I, R)$ is equation (3.4).

$$D(I, R) = \frac{1}{2c} \sum_{x=1}^c \sum_{y=1}^c |r_x - r_y| \quad (3.4)$$

Where the centers of clusters x and y are set to r_x and r_y in turn. The clustering needs to take into account the inter-class closeness and inter-class distribution status. The weights are set to α , β , and the evaluation index for obtaining the optimal clustering is Eq. (3.5).

$$S(I, R) = \frac{\delta^2(I, \bar{I})}{\beta/\alpha} + \frac{\alpha}{D(I, R)} \quad (3.5)$$

Where $\delta^2(I, \bar{I})$ describes the high level of clustering closeness. $\frac{\alpha}{D(I, R)}$ describes the state of clustering distribution and the existence of correlation between the geometric orientation of clustering centers, which is used to balance the interference of the 2 evaluation indexes on the clustering criterion.

3.2 Constructing the Interpretation Teaching Evaluation Index System

The process of constructing the English interpretation teaching quality assessment index system is shown in Figure 1.

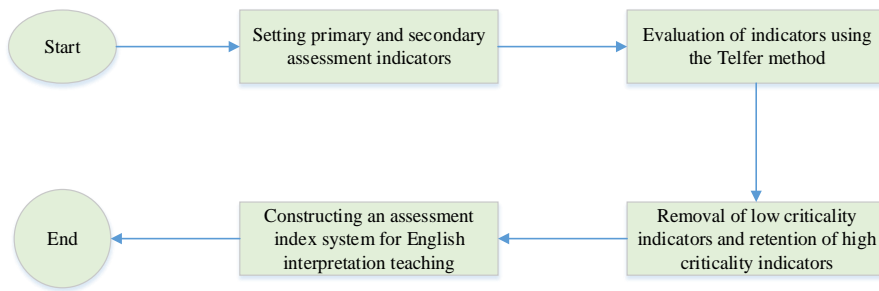


Figure 1: Flow chart of assessment index system.

According to Figure 1, the flow of English interpretation teaching assessment index system is constructed as follows.

- 1) The English interpretation teaching quality assessment index system needs to use the optimal data-based clustering criterion method to screen assessment indicators and obtain English interpretation teaching quality assessment indicators.
- 2) Multiple primary indicators and multiple secondary indicators are set.
- 3) Use the Telfer method to evaluate the critical level of indicators, remove the indicators that are not critical according to the critical level, and keep the indicators with high critical level.
- 4) Construct an index system for assessing the quality of English interpretation teaching.

The results of the construction of the English interpretation teaching quality assessment index system are shown in Figure 2

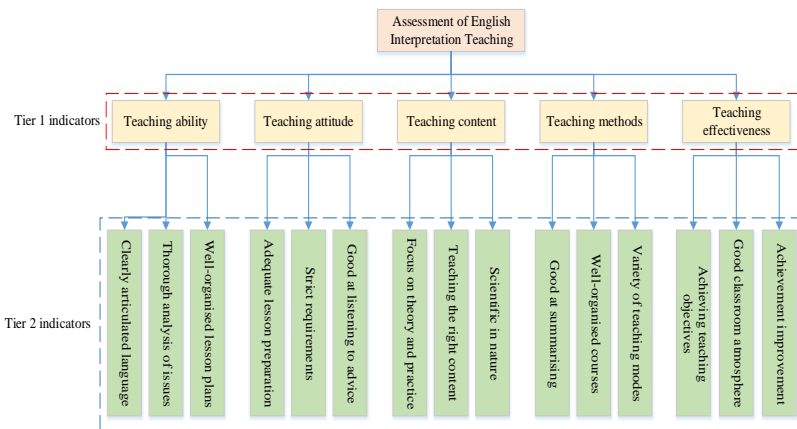


Figure 2: English interpretation teaching quality assessment index system.

3.3 Assessment Methods of Interpretation Teaching

The assessment steps of the English interpretation teaching assessment method proposed in this paper are as follows.

3.3.1 Set up the reference sequence and comparison sequence

If there exist w English interpretation teaching quality assessment index factors and t assessment subjects, the raw data matrix obtainable is equation (3.6).

$$I = \begin{bmatrix} i_{11} & i_{12} & \cdots & i_{1w} \\ i_{21} & i_{22} & \cdots & i_{2w} \\ \vdots & \vdots & \cdots & \vdots \\ i_{t1} & i_{t2} & \cdots & i_{tw} \end{bmatrix} \quad (3.6)$$

Let there exist u assessment levels in the assessment criteria, then the assessment set is $L = \{L_1, L_2, \dots, L_p\}$.

Implement the homogenization operation to the original judgment matrix and obtain the mean value of t assessment targets for w indicator factors, set as \bar{I}_w , and set this mean value as a reference sequence. Implement quantification for each assessment level in the assessment set L , and extract the judgment matrix of w indicators corresponding to the quantified values, and the matrix is equation (1.7).

$$L = \begin{bmatrix} l_{11} & l_{12} & \cdots & l_{1w} \\ l_{21} & l_{22} & \cdots & l_{2w} \\ \vdots & \vdots & \cdots & \vdots \\ l_{u1} & l_{u2} & \cdots & l_{uw} \end{bmatrix} \quad (3.7)$$

Set this judgment matrix L as a comparison matrix. In the research content of this paper, the details of the assessment levels set are shown in Table 1.

<i>Rating</i>	<i>Level</i>
<i>[90,100]</i>	<i>Very good</i>
<i>[70,89]</i>	<i>Good</i>
<i>[60,69]</i>	<i>Common</i>
<i>[0,59]</i>	<i>Worse</i>

Table 1: Details of assessment levels

3.3.2 Correlation coefficients in the assessment of English interpretation teaching

The reference sequence i_{0y} and the comparison sequence i_{xy} are subjected to dimensionless operation [5] to obtain the normalized matrix. The elemental algorithm is equation (3.8).

$$i'_{xy} = \frac{i_{0y}}{i_{xy}} \quad (3.8)$$

Operate the correlation coefficient and correlation degree between the comparison sequence and the reference sequence as in equation (3.9) and equation (3.10).

$$\xi_{xy} = \frac{\min_x \min_y |i'_{0y} - i'_{xy}| + \rho(y) \max_x \max_y |i'_{0y} - i'_{xy}|}{|i'_{0y} - i'_{xy}| + \rho(y) \max_x \max_y |i'_{0y} - i'_{xy}|} \quad (3.9)$$

$$\gamma_x = \frac{1}{w} \sum_{x=1}^w \xi_{xy} \quad (3.10)$$

Where, $|i'_{0y} - i'_{xy}|$, $\min_x \min_y |i'_{0y} - i'_{xy}|$ are the corresponding absolute difference of the x-th kind of the y-th index, the minimum value of the absolute difference between the two levels. $\max_x \max_y |i'_{0y} - i'_{xy}|$, $\rho(y)$ are the maximum value of the absolute difference between the two levels and the judgment coefficient, respectively.

3.3.3 Determining the evaluation level

If a certain comparison series and the reference series are very close, then the correlation degree value between them is large. This means that each index factor to be evaluated is very close to this comparison sequence, and the corresponding evaluation level of the comparison data is the final evaluation result at this time.

4 RESULT ANALYSIS AND DISCUSSION

4.1 Application Case

Take the English interpretation course as an example, for a total of 320 students in 8 administrative classes in the class of 2021. Among them, 4 classes adopted the English interpretation teaching quality evaluation method proposed in this paper to make real-time adjustments to the course. The other four classes served as control classes to implement a comparison of the interpretation teaching effectiveness of the evaluation and analysis method. Starting from the basic requirements of teaching English interpretation courses, experts in the teaching field from several universities (Peking University, Beijing Foreign Studies University and Beijing Normal University) were consulted to determine the course teaching quality evaluation indexes and fill in the relationship judgment table. This is the factor relationship comparison matrix. Then the hierarchical analysis method was used to determine the initial weights M_W of the index relationships using SPSS software, as shown in equation (4.1).

$$\begin{array}{cccccc}
 0 & 0.14 & 0.23 & 0.13 & 0.24 & 0.21 \\
 0.14 & 0 & 0.12 & 0.34 & 0.23 & 0.12 \\
 0.23 & 0.12 & 0 & 0.13 & 0.16 & 0.31 \\
 0.13 & 0.34 & 0.13 & 0 & 0.14 & 0.21 \\
 0.24 & 0.23 & 0.16 & 0.14 & 0 & 0.18 \\
 0.21 & 0.12 & 0.31 & 0.21 & 0.18 & 0
 \end{array} \quad (4.1)$$

A total of 160 students participated in the evaluation of the English interpretation teaching course, which was divided into two semesters. Before the start of the course, an electronic questionnaire was distributed to the students on StudyHub [2] to obtain the top three relationships that each student thought were the most relevant factors and rate them (on a 10-point scale), and the scores were imported into Excel. The data pre-processing is mainly to remove invalid relationships and invalid scores and integrate the valid scores of all factor relationships. It is normalized and used as the initial weight M_X . As shown in equation (4.2).

$$M_X = \begin{bmatrix} 0 & 0.15 & 0.17 & 0.23 & 0.18 & 0.22 \\ 0.15 & 0 & 0.20 & 0.17 & 0.24 & 0.19 \\ 0.17 & 0.20 & 0 & 0.15 & 0.20 & 0.23 \\ 0.23 & 0.17 & 0.15 & 0 & 0.20 & 0.20 \\ 0.18 & 0.24 & 0.20 & 0.20 & 0 & 0.13 \\ 0.22 & 0.19 & 0.23 & 0.20 & 0.13 & 0 \end{bmatrix} \quad (4.2)$$

In the first semester, students scored the teaching quality evaluation factors after each lecture, and their average values were counted as the evaluation scores for each lecture for each indicator of the course. The scores obtained each week were input into the constructed model. And the model weights were updated until the final weight matrix M_x of the English interpretation course was obtained at the end of the course in that semester. The factor relationship diagram is shown in Figure 3.

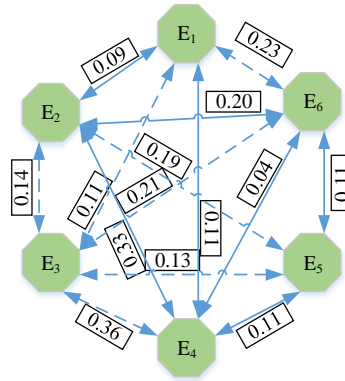


Figure 3: Factor relationship diagram of English interpretation teaching.

Further, the stronger relationship threshold th and the strong relationship threshold sth are calculated according to the following equations, as shown in equations (4.3) and (4.4).

$$th = \frac{\sum_{x=1}^6 \sum_{y=x+1}^6 m_{xy}}{15} \quad (4.3)$$

$$sth = 1.5 \times th \quad (4.4)$$

When the relationship weight is greater than the stronger relationship threshold th , this is considered as a stronger relationship. When the relationship weight is greater than the strong relationship threshold sth , such a relationship is regarded as a strong relationship. The factor strong relationship diagram of English interpretation teaching is obtained, as shown in Figure 4.

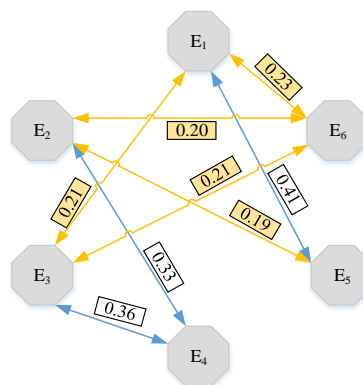


Figure 4: Factor strong relationship diagram of English interpretation teaching (Yellow is the stronger relationship. Blue is a strong relationship).

In view of the obtained factor strong relationship diagram, it is obtained that the teaching team has a strong relationship with teaching activities. The following three methods can be used to improve the English interpretation teachers' strength. One is to improve the access conditions of English interpretation teachers. Second is to strengthen teachers' professional activities. The third is to develop a comprehensive and effective teacher code of conduct [4]. For teaching activities, teaching activities can be improved and perfected by designing diversified, personalized and targeted teaching models. The improvement of the quality of two factors, teaching team and teaching activities, can play a mutually reinforcing role, thus making the overall teaching effect improved. Furthermore, teaching objectives and teaching methods have a strong relationship with teaching contents, reflecting the important position of teaching contents in the evaluation of teaching quality. When the teaching content is relatively difficult and boring, reasonable teaching methods can be used to improve students' understanding and mastery of the teaching content. In this way, students' sense of participation, interaction and belonging to the classroom are enhanced, and the relevance of the teaching content is improved, while the achievement of teaching objectives is enhanced. In the second semester, the factors adjusted in the first semester were used as the initial situation to implement the teaching, and the factors were adjusted in a timely manner according to the weekly student evaluations to provide targeted guidance for teaching English interpretation, thus improving the teaching quality of the English interpretation course.

4.2 Effect Analysis

4.2.1 Analysis of Teaching Quality Factors

The factor rating data were analyzed using SPSS software [18] to verify the correlation between students' online ratings of quality factors and the final exam, as shown in Table 2.

<i>Impact factors</i>	<i>Teaching Team</i>	<i>Teaching Objectives</i>	<i>Teaching methods</i>	<i>Teaching content</i>	<i>Teaching activities</i>
<i>Grades</i>	<i>0.800</i>	<i>0.785</i>	<i>0.844</i>	<i>0.842</i>	<i>0.793</i>

Table 2: Correlation between teaching scores and grades.

Table 2 shows that students' online ratings of quality factors were positively correlated with the final exam. This indicates that students' scores on quality factors are more related to their learning quality. Therefore, analyzing the degree of correlation between quality factors can improve the level of quality factors, which has a greater effect on improving the quality of teaching, thus further validating the importance of analyzing the relationship between influencing factors.

4.2.2 Effectiveness of Student Evaluation

At the beginning and end of the second semester of the course, 160 questionnaires were distributed to students for five factors [24] affecting teaching quality, including teaching team (E1), teaching objectives (E2), teaching methods (E3), teaching contents (E4) and teaching activities (E5), respectively, to investigate students' satisfaction with teaching after adjustment according to evaluation analysis. Students' satisfaction is shown in Figure 5.

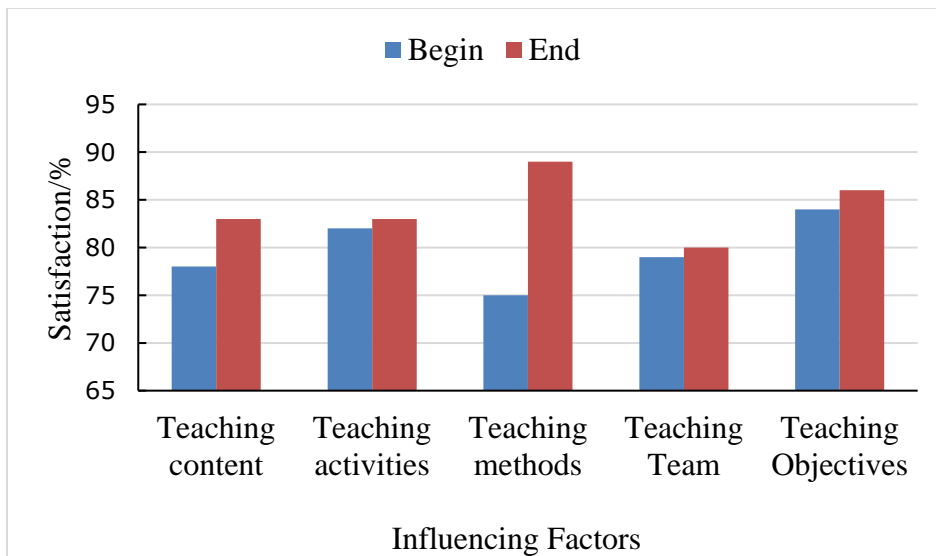


Figure 5: Student satisfaction of English interpretation teaching quality factors (%).

Figure 5 shows that after adjusting the factors affecting the quality of English interpretation teaching according to the students' online evaluation analysis, students' satisfaction with each factor has been improved overall. Especially for the strong relationship between teaching team and teaching activities, the improvement of teaching team (introducing experienced teachers to teach in the second semester) led to the improvement of satisfaction of both teaching team and teaching activities. For the three factors with strong relationships, teaching objectives (E2), teaching methods (E3) and teaching contents (E4), the teaching contents were adjusted according to students' knowledge base and teaching difficulties, and the teaching activities were improved and perfected, so that the satisfaction of all three factors was significantly improved.

4.2.3 Comparison of Learning Effectiveness

To further compare the differences in the quality of English interpretation teaching between the evaluation models with and without online evaluation factor analysis, the quality of English interpretation teaching in four other administrative classes of 160 students was selected for implementation of comparison. The results of the comparative analysis of the final paper grades are shown in Table 3 and Figures 6 and 7.

<i>Student Assessment Analysis</i>	<i>Average value</i>	<i>Standard deviation</i>	<i>Deviation from expectations</i>
<i>Yes</i>	<i>78.52</i>	<i>12.2</i>	<i>2.11</i>
<i>No</i>	<i>76.9</i>	<i>15.31</i>	<i>3.63</i>

Table 3: Statistics of final grades.

Table 3 shows that the mean of the paper surface of the classes with online evaluation analysis improved by 1.62 points, the standard deviation decreased by 20.4%, and the deviation from the expected value decreased by 1.52. This indicates that the overall performance was improved and the distribution of grades was more concentrated on the expected score, which improved the overall teaching quality.

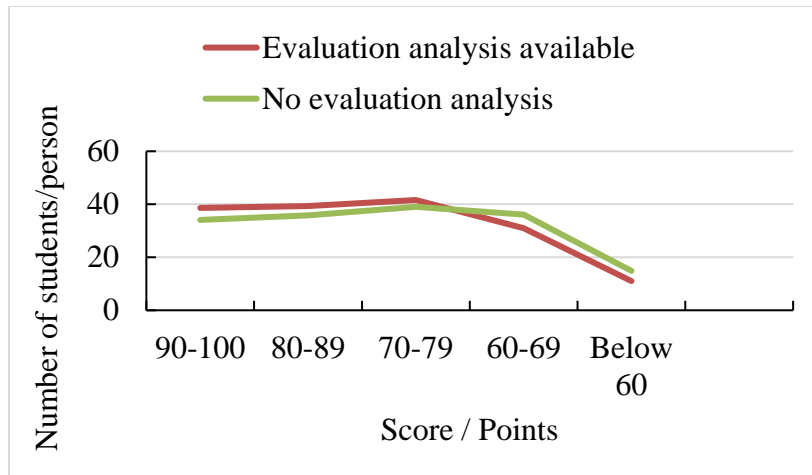


Figure 6: Comparison of end-of-term paper scores.

Figure 6 shows that the final grades with evaluation analysis increased by 2.6% and decreased by 2.6% compared to the teaching format without online student evaluation analysis. Classes taught with improvements to the teaching process based on the results of student evaluation analysis saw an increase in overall performance and improved polarization, enhancing the quality of instruction.

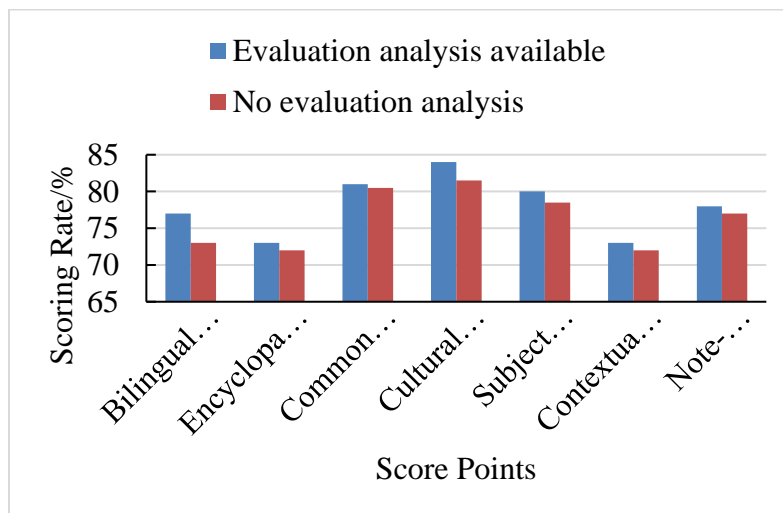


Figure 7: Comparison of knowledge point scores.

Figure 7 shows the score rates of each knowledge point in the final exam for classes with and without online student assessment analysis. It showed that students with the evaluation analysis improved their performance in all aspects to varying degrees, especially in the bilingual knowledge points, which improved significantly. The statistical results further indicate that the teaching mode with assessment analysis has led to an overall improvement of students' ability and the quality of teaching.

5 CONCLUSION

To address the issue of quality evaluation of English interpretation teaching in universities, the article proposes a targeted evaluation method - a gray correlation assessment method for English interpretation teaching that integrates the idea of multivariate analysis. The proposed method is applied to evaluate the quality of teaching in a university, and it is verified that the primary and secondary indicators are selected reasonably, and the evaluation results have significant stability and consistency across time. Based on the learning mechanism constructed by expert evaluation and student evaluation respectively, this paper revises and updates the relationships among the factors to obtain factor relationships that are more consistent with the actual situation. Taking the teaching of an English interpretation course in a university as an example, the proposed factor analysis method for evaluating the quality of English interpretation teaching is used to integrate expert evaluation and student evaluation to give a map of the relationship between the factors for evaluating the teaching quality of the course. This provides a basis for improving the teaching level and forms a virtuous cycle of "teaching-evaluation-correction". The proposed method was analyzed and verified in two teaching semesters of English interpretation, and the effectiveness and superiority of the proposed method were confirmed in three aspects: quality factor analysis, student evaluation effect, and learning effectiveness, which contributed to the improvement of teaching quality.

The experimental basis of this study is the teaching process of one round of the English interpretation course, with a limited amount of experimental data and a lack of validation experiments and analysis of the assessment of teaching performance in other courses. In the future, we will continue to carry out teaching models based on this method, accumulate more practical data and practical teaching cycles, provide a reliable basis for considering and revising this method, and make the proposed method for evaluating the quality of English interpretation teaching factors analysis more and more perfect in practice. Multiple course modules can be added to the constructed teaching quality evaluation factor analysis model, and this method will be applied to multiple courses in future research, while integrating the correlations and roles of different courses to obtain the correlation mechanisms of teaching quality evaluation factors in a comprehensive and multi-dimensional way, in order to improve the validity and accuracy of the model in multiple dimensions.

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