

## Retraction

# Retracted: Evaluation and Application of College English Mixed Flipping Classroom Teaching Quality Based on the Fuzzy Judgment Model

### Security and Communication Networks

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

### References

- [1] X. Gao, "Evaluation and Application of College English Mixed Flipping Classroom Teaching Quality Based on the Fuzzy Judgment Model," *Security and Communication Networks*, vol. 2022, Article ID 9611611, 9 pages, 2022.

## Research Article

# Evaluation and Application of College English Mixed Flipping Classroom Teaching Quality Based on the Fuzzy Judgment Model

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With the development of big data technology, there are more and more evaluation models for college English teaching quality, which can better promote the improvement of college English teaching quality. Based on the fuzzy decision model, this paper describes the algorithm establishment process of the model in detail. Then, the fuzzy evaluation model between teachers and students according to different grades is established. Finally, aiming at the problems in college English teaching, this paper obtained the corresponding countermeasures for the college English teaching platform based on fuzzy judgment model. The results indicate the model improves the quality of college English teaching in different grades and promotes the development of college English. In addition, the model platform can also well predict the measures to improve the quality. In short, this paper provides some theoretical and experimental support for the quality of college English hybrid flipping classroom.

## 1. Introduction

At present, the speed of social development is rapid, big data is more extensive, and the English teaching mode of integrating flipped classroom based on the use of Internet resources and information technology is a way of continuous innovation of college English courses. The application of flipped classroom can better fit the teaching concept of college English reform, combine with real life, improve students' perception of life, and improve students' English application ability [1].

"Flipped classroom" refers to the fact that, in the information environment, teachers provide sufficient resources to students based on the difficult points of teaching, and teaching microvideo is the main presentation form of these learning resources. Before classroom teaching, students first watch the teaching video of the class, preview the knowledge points in advance, or practice online so as to successfully complete the knowledge transfer [2]. In order to help students consolidate their knowledge, it is particularly important for teachers to design different classroom activities in order to achieve the purpose of knowledge internalization, and students can deeply learn English knowledge.

Generally speaking, this teaching model not only "flips" the learning process but also completely "flips" the respective roles of teachers and students. Students become the main body of teaching, and teachers become the leader of teaching. Flipped classroom has played a guiding role in educational reform, and the traditional teaching methods will be replaced [3]. The advantage of flipped classroom lies in the rational allocation of classroom resources to maximize the learning effect of students.

In teaching, teachers cannot teach without teaching materials. Through the teaching materials, teachers are in the leading position. As a result, there is a "one speech hall" situation [4]. When traditional classroom teaching is used, the characteristic of the hybrid teaching mode is to effectively combine network teaching with modern teaching means. Under the guidance of teachers, college students can successfully master scientific learning methods and complete the learning content [5, 6]. Meanwhile, they strengthen the cultivation of students' creativity and can learn English knowledge independently. To carry out mixed teaching, we should take the following two aspects: first, from the perspective of students, carry out more group communication activities according to students' habits, styles, interests, and

goals. Second, through the students' knowledge, ensure the design of scientific and reasonable teaching programs, and let students have the initiative in the classroom. In addition, the concept of cooperation must be followed in mixed teaching. During teaching, teachers can be redefined through autonomous learning or group cooperation [7].

However, at present, there are the following problems in college English teaching [8, 9]: (1) the credit hours are significantly reduced, and the scale of teaching classes is huge. As colleges and universities constantly update their talent training programs, college English is also facing subversive teaching reforms. Students do not have many opportunities to exercise in the classroom. As we all know, language learning is a process that needs persistence and continuous accumulation, which cannot be completed overnight. Therefore, in language teaching, students must be required to participate, speak boldly, interact more with teachers, and get full exercise [10].

(2) The teaching idea is old. In recent years, the traditional college English teaching mode of "Internet + chalk + blackboard" has been widely used in various industries, but it is difficult to adapt to this situation [11]. It has been replaced by new teaching modes such as multimedia classroom and smart classroom and has gradually changed the teaching philosophy of college English teachers. However, it should be noted that, constrained by the deep-rooted traditional teaching ideas and information technology ability, many college English teachers still abide by the traditional teaching ideas in the short term. Although multimedia technology has been effectively used in teaching, many teachers continue to use the "indoctrination" teaching method to complete English teaching. This teaching method is too single, and teachers are singing "monologue," which has greatly affected the quality and effect of college English teaching [12].

(3) Students do not have strong language application ability [13]. The dominant position of teachers has always been the key part of the traditional college English teaching model. Teaching is mainly taught by teachers. Although teachers' "cramming" explanation of vocabulary and grammar plays a certain role in students' mastering textbook content and understanding vocabulary, from the perspective of long-term development, this teaching model does not put the cultivation of students' subjective initiative in an important position, and students learn passively, let alone interested in English learning. Therefore, if the mode is adopted, it will have a negative impact on the cultivation of college students' communicative ability in English teaching [14].

In the traditional teaching stage of college English, the evaluation mode of students will still start from the examination results, increase the daily attendance assessment, and score the completion of homework, but such an assessment mode still cannot achieve the purpose of detailed assessment, nor can it achieve the detailed assessment of students' learning process and learning attitude, which affects the comprehensive evaluation. Under the situation of online and offline mixed teaching, the evaluation mechanism for students needs to be adjusted into a more comprehensive model and implement diversified teaching evaluation requirements. In the assessment stage, in addition to measuring the performance,

we also need to consider the students' online learning and the activity of online communication. On the basis of comprehensive assessment, teaching evaluation is no longer limited to teachers' personal behavior but can comprehensively feed back students' learning status and the real level of knowledge in a more objective way.

As for the fuzzy concept of evaluation and application of college English, it is impossible to accurately define the level of mixed flipped classroom with precise mathematics. However, from fuzzy mathematics, it is impossible to define the level of its ability in the evaluation and application [15, 16]. However, we can evaluate the degree to which the evaluation and application of teaching quality belong to one or several levels, which can be quantified as membership.

Hybrid teaching method is to add online content on the basis of traditional offline. On the premise of the combination of traditional education mode and information education mode, it can no longer be limited by teaching time and realize "online + offline" teaching [17]. This kind of teaching method does not simply increase the form of online teaching but needs to better integrate resources and apply resources to innovative curriculum teaching mode so as to provide students with a wider way of knowledge acquisition, create a benign competitive environment, and better implement personalized learning requirements without the limitation of time and space [18].

The multifactor comprehensive evaluation method based on the fuzzy decision model establishes a comprehensive evaluation model which is closer to human thinking mode through the self-learning, self-adaptive ability, and strong fault tolerance of the neural network. The trained neural network endows the evaluation idea of experts to the network in the form of connection weight. In this way, the network can not only simulate experts for quantitative evaluation but also avoid human errors in the evaluation process. Because the weights of the model are obtained through case study, the subjective influence and uncertainty of the artificial calculation of weights and correlation coefficients in the fuzzy comprehensive evaluation method are avoided.

Yan et al. [19] found that the Internet of things model can facilitate teachers' teaching and has good application value. According to Liu's study [20], the teaching quality evaluation system of college English hybrid flipped classroom is established by using the method of fuzzy mathematics, and the model is verified and analyzed through experiments. The results indicate the fuzzy mathematical model can objectively put forward effective suggestions, which promotes the development of college English teaching. Huang et al. [21] established a fuzzy judgment matrix by investigating and analyzing the teaching quality in different schools, which has a good effect on the evaluation. By the fuzziness of the teaching quality of college English, Zhang [22] showed the English teaching mixed flipped classroom as a multiobjective fuzzy recognition problem and established a fuzzy recognition theoretical model according to the characteristics of fuzzy mathematics, which has good application results.

Therefore, using the method of fuzzy mathematics, this paper establishes the evaluation based on fuzzy judgment

model for college English mixed flipped classroom, applies this system to the quality of college English education in different grades, analyzes the college English teaching process of teachers and students in each grade in detail, and improves the corresponding measures about the teaching quality of college English mixed flipped classroom, which provides some theoretical and experimental support.

## 2. Establishment of the Fuzzy Judgment Model

It is assumed that there are  $n$  teaching modes in the mixed flipped classroom, in which any state  $j$  ( $j = 1, 2, 3, \dots, n$ ) has  $m$  characteristic index values for evaluation and judgment  $\mu_i$  ( $i = 1, 2, 3, \dots, m$ ), such as English teaching methods, teaching ideas, and teaching feedback. Then, according to different characteristics,  $\mu_i$  has different membership functions  $\mu_j(\mu_i)$ , a characteristic index  $\mu_j$  [23]. The value of  $i$  is substituted into the membership function of the index corresponding to the  $j$ -th state  $\mu_j(\mu_i)$ , and the membership degree can be calculated and normalized to make the membership degrees change within the  $[0, 1]$  interval to form the  $m$ -order fuzzy relationship matrix  $R$ . In addition, the membership degree can represent the accuracy of flipped classroom teaching mode and reflect the accuracy of membership function. That is,

$$R = \begin{bmatrix} \mu_1 \\ \mu_2 \\ \dots \\ \mu_m \end{bmatrix} = \begin{bmatrix} \mu_{11}(\mu_1) & \mu_{12}(\mu_1) & \dots & \mu_{1n}(\mu_1) \\ \mu_{21}(\mu_2) & \mu_{22}(\mu_2) & \dots & \mu_{2n}(\mu_2) \\ \dots & \dots & \dots & \dots \\ \mu_{m1}(\mu_m) & \mu_{m2}(\mu_m) & \dots & \mu_{mn}(\mu_m) \end{bmatrix}. \quad (1)$$

The importance of  $m$  characteristic indicators in the teaching quality of college English mixed flipped classroom is different. Therefore, when evaluating and comparing, the importance of these characteristic indicators must be analyzed. According to expert experience, the improved AHP method is used to separate their different weight values  $w$  and form a fuzzy weight vector  $W$ , which refers to the combination of the weight values of the improved flipped classroom features, and has the characteristics of timeliness, data, and inclusion; namely,

$$W = [w_1, w_2, \dots, w_m]. \quad (2)$$

According to the principle of fuzzy synthesis, the fuzzy weight vector  $W$  is multiplied by the fuzzy relation matrix  $R$  to form the fuzzy evaluation model vector  $B$ ; that is,

$$\begin{aligned} B &= WR \\ &= [w_1, w_2, \dots, w_m] \begin{bmatrix} \mu_{11}(\mu_1) & \mu_{12}(\mu_1) & \dots & \mu_{1n}(\mu_1) \\ \mu_{21}(\mu_2) & \mu_{22}(\mu_2) & \dots & \mu_{2n}(\mu_2) \\ \dots & \dots & \dots & \dots \\ \mu_{m1}(\mu_m) & \mu_{m2}(\mu_m) & \dots & \mu_{mn}(\mu_m) \end{bmatrix} \\ &= [b_1, b_2, \dots, b_m], \end{aligned} \quad (3)$$

where  $b_j$  is the fuzzy evaluation value of the  $j$ -th state, and the larger the value is, the closer it is to the normal state.

## 3. Establish the Membership Function of Each Index

In the fuzzy set, the membership function can well describe the fuzziness of things. The commonly used membership functions in the fuzzy set include Gaussian membership function, generalized bell membership function, S-type membership function, trapezoidal membership function, triangular membership function, and Z-type membership function [24]. The shape of the membership function in the fuzzy set has little influence on the characteristics of the model, while the membership function of each fuzzy subset is important to the characteristics of the fuzzy model. Because the trapezoidal membership function can better classify and analyze the fuzzy set data with high accuracy, this paper uses the trapezoidal membership function to model and analyze the data.

*3.1. Membership Function of Characteristic Index R.* In normal college English teaching, characteristic index  $R$  represents the number of college English textbooks, and the average value of  $R$  is 25. With the increase in teaching time, the value of  $R$  also increases. When it is greater than 90 d, the teaching quality is greatly improved. If English teaching is not carried out regularly, the teaching quality is seriously reduced after more than 48 d. At this time, the membership function conforms to the upper limit type of trapezoidal distribution; namely,

$$\mu_1(\mu_1) = \begin{cases} 1, & \mu_1 \leq 25, \\ \frac{90 - \mu_1}{90 - 25}, & 25 < \mu_1 \leq 90, \\ 0, & \mu_1 > 90. \end{cases} \quad (4)$$

*3.2. Membership Function of Characteristic Index G.* Characteristic index  $G$  represents the number of college English students; with the increase in college English teaching time, the  $G$  value will continue to increase. If the teaching time reaches 80 d, the teaching quality of the hybrid flipped classroom will decline. In the normal teaching state, the average value of  $G$  is 50. If it is less than or equal to 50, the membership function conforms to the upper bound type of trapezoidal distribution. If the teaching time is less than 24 d, it will lead to a reduction in students' interest in learning in college English teaching.

$$\mu_2(\mu_2) = \begin{cases} 1, & \mu_1 \leq 50, \\ \frac{80 - \mu_2}{80 - 50}, & 50 < \mu_1 \leq 80, \\ 0, & \mu_1 > 80. \end{cases} \quad (5)$$

3.3. *Membership Function of Characteristic Index B.* In normal college English teaching, characteristic index  $B$  represents the number of college English teachers; with the increase in teaching time, the value of  $B$  also increases. When it is less than 2 d, the teaching quality decreases significantly [25]. Therefore, the membership function conforms to the lower limit type of trapezoidal distribution.

$$\mu_3(\mu_3) = \begin{cases} 0, & \mu_3 \leq 2, \\ \frac{\mu_3 - 2}{20 - 2}, & 2 < \mu_3 \leq 20, \\ 1, & \mu_3 > 20. \end{cases} \quad (6)$$

3.4. *Membership Function of Characteristic Index r.* In normal college English teaching, characteristic index  $r$  represents the learning efficiency of college English courses. The average value of  $r$  is 0.5. With the increase in teaching time, the value of  $r$  also increases. When it is greater than 0.85, the membership function conforms to the upper limit type of trapezoidal distribution.

$$\mu_4(\mu_4) = \begin{cases} 1, & \mu_4 \leq 0.5, \\ \frac{0.5 - \mu_4}{0.85 - 0.5}, & 0.5 < \mu_4 \leq 0.85, \\ 0, & \mu_4 > 0.85. \end{cases} \quad (7)$$

3.5. *Membership Function of Characteristic Index b.* In normal college English teaching, characteristic index  $b$  represents the teaching efficiency of college English courses, and the average value of  $b$  is greater than 0.35. With the increase in teaching time, the value of  $b$  continues to decrease. When it is less than 0.05, the quality begins to decline, and teachers' teaching enthusiasm will also decrease. At this time, the membership function conforms to the lower limit type of trapezoidal distribution.

$$\mu_5(\mu_5) = \begin{cases} 0, & \mu_4 \leq 0.05, \\ \frac{\mu_5 - 0.05}{0.35 - 0.05}, & 0.05 < \mu_4 \leq 0.35, \\ 1, & \mu_4 > 0.35. \end{cases} \quad (8)$$

3.6. *Vector Calculation of the Fuzzy Evaluation Model.* Through the test of known samples, a fuzzy evaluation model or function is established on the basis of feature extraction. According to the membership function of the above determined characteristic index and combined with the test data, what is more, the fuzzy relation matrix  $R$  combines the membership function with the experimental data in detail, which can better reflect the relationship between the indicators of the flipped classroom. Meanwhile, the fuzzy relationship matrix  $R$  is calculated:

$$R = \begin{bmatrix} 1 & 0.839 & 0.829 & 0.652 & 0 \\ 1 & 0.430 & 0.364 & 0.397 & 0 \\ 1 & 0.768 & 0.162 & 0.010 & 0 \\ 1 & 0.878 & 0.858 & 0.459 & 0 \\ 1 & 0.620 & 0.146 & 0.015 & 0 \end{bmatrix}. \quad (9)$$

According to the expert experience, the fuzzy weight vector matrix  $W$  is determined by using the improved analytic hierarchy process:

$$W = [0.0799, 0.1145, 0.2548, 0.3801, 0.1708]. \quad (10)$$

Then, the fuzzy evaluation vector is

$$B = WR = [1.000, 0.7515, 0.5002, 0.2771, 0]. \quad (11)$$

According to the fuzzy function relationship, the establishment equation of the fuzzy judgment model can be obtained, and its algorithm flow is shown in Figure 1. The fuzzy decision model mainly includes the modeling process. While establishing the fuzzy judgment model, by investigating the functions of all aspects and then analyzing the membership law of each specific index, the fuzzy judgment model is established accurately.

Then, by analyzing the quality of mixed flip classroom, a college English classroom teaching quality evaluation platform based on a fuzzy judgment model is established. The platform of hybrid flipped classroom is mainly divided into four stages: classroom guiding students' autonomous learning, classroom optimizing teaching content, extending classroom teaching after class, and enriching and innovating evaluation methods. These four stages complement each other and organically combine students' subjective initiative, teachers' teaching ability, after-class learning, and innovative development. In general, the specific implementation diagram of the evaluation platform is in Figure 2.

## 4. Application of Mixed Flipped Classroom Platform

4.1. *Preclass Exploration.* Due to the rise of online video class and online live broadcast class, hybrid teaching came into being. Video online classes are superior to traditional classes in the grasp of course duration and the rhythm of knowledge explanation to a certain extent. Online teaching can also make use of richer materials to enrich the whole video so that students can maintain high interest and concentration throughout the whole process. Meanwhile, online video

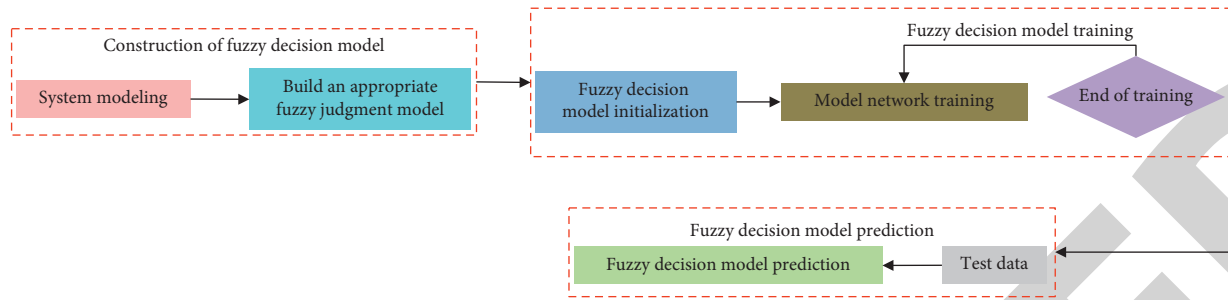


FIGURE 1: Algorithm flow based on the fuzzy decision model.

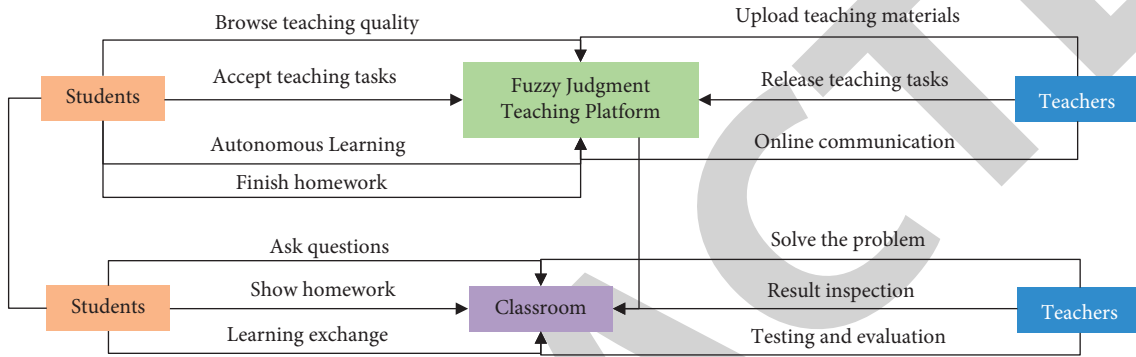


FIGURE 2: Process of college English teaching quality evaluation platform based on the fuzzy decision model.

classes usually combine the teaching experience of a large number of excellent teachers to convey knowledge more accurately. The download of online teaching materials makes it easier for students to review at any time and avoid the problem of forgetting. In terms of knowledge expansion, through careful planning, the output content of online courses will undoubtedly be more accurate, and the materials used are often hot topics at present, which is more timely. Obtain examples or contents related to the course on the network and add them to the video of the course. Through these more time-effective contents, students will undoubtedly better integrate into the classroom and produce better portability. Video, pictures, and other contents also further enrich the video content. Coupled with excellent video production, they impact students' perception from visual, auditory, and other aspects and stimulate students to have a stronger interest in learning.

Figure 3 shows the scores of teachers and students on the quality of college English teaching based on the fuzzy decision model in different grades. We can see that the scores of teachers and students increase first and then decrease. For sophomores and juniors, there is little difference in the scores of teachers and students. The reason for this phenomenon is that freshmen are not familiar with the mixed flipped classroom judgment model, which leads to low scores between teachers and students. As senior students want to find a job, their interest in English classroom learning decreases and their score value will decrease, which will also reduce the score value of teachers. Therefore, in the lecture part, different from the traditional classroom, teachers should use stronger expressiveness to express the content to students. Hold the students tightly with more

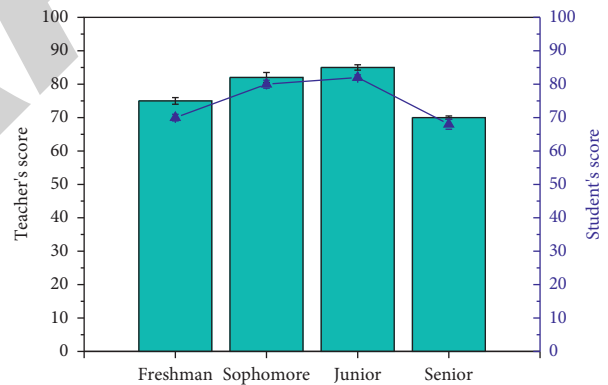


FIGURE 3: Scores of teachers and students on college English teaching quality based on the fuzzy decision model in different grades.

attractive language, let the students focus on the teaching content, and ensure that they are not disturbed by the outside world. In addition to their own teaching experience, the key parts of knowledge are demonstrated to students in different ways to improve the identification of content. In the teaching process, leave appropriate time, give students the opportunity to think, and grasp the sense of rhythm and relax, so that students can fully accept all the contents. In short, in order to improve the teaching quality of college English, we should arrange appropriate teaching time according to the teaching level of each teacher and local conditions. At the same time, we should also give full play to the students' subjective initiative in learning and stimulate the interest of different grades according to the students'



actual state and personal ability so as to improve the teaching quality of college English flipped classroom.

*4.2. Discussion on Actions in Class.* As a new learning method, flipped classroom is not only the product of the times but also a more characteristic learning concept in today's network information background, which enables students to learn more autonomously rather than simply accept it. They can also use the convenient technology of the network to add more time-effective content, online video, news, and so on in teaching. They can also bring students more interesting learning experience in this new form in the classroom. Students can understand their difficult problems from others' statements in the discussion link. In this process, teachers mainly summarize the knowledge points and comment on the views of group discussion. This targeted classroom activity can make students feel the sense of achievement of knowledge exploration and increase their enthusiasm for autonomous learning. The efficiency of English teaching has also been significantly improved. In addition, based on the microclass learning completed by students before class, students have independently learned the important and difficult points of text knowledge. Teachers can use PPT to carry out group competition and answer activities of relevant knowledge points for students in class. This activity can provide students with the detection and review links of learning content.

The discussion in college English mixed flipped classroom is in Figure 4. We can see that the discussion situation of sophomores and juniors fluctuates, but the fluctuation is relatively flat, which is suitable for the platform of English hybrid flipped classroom. The discussion situation of freshmen is low. The main reason may be that freshmen are not familiar with the college English teaching quality evaluation platform, which leads to the fluctuation of the discussion situation. Senior students seldom use the evaluation platform of college English teaching quality because there are few English courses, so the discussion of students shows a decreasing trend. In order to better motivate students of different grades to use the evaluation platform of college English mixed flipped classroom teaching quality based on fuzzy judgment model, students' interest in learning English should be stimulated, and different teaching methods should be adopted to teach English to students of different grades.

*4.3. Discussion on Actions after Class.* The innovation of teaching activities is also very important, which is important to ensure the practical of college English mixed teaching based on flipped classroom. First of all, before classroom teaching, teachers need to systematically integrate students' learning problems and take problem orientation as the core of classroom teaching. Teachers design several preclass questions. Under the guidance of questions, students can have a strong desire to explore and then carry out in-depth learning with questions. In this process, they can fully

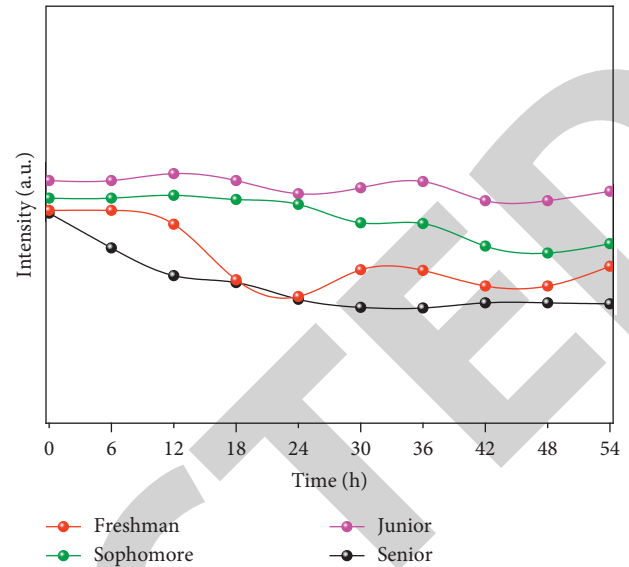


FIGURE 4: Analysis of discussion in college English mixed flipped classroom in different grades.

exercise students' ability to analyze. Secondly, college English curriculum is highly theoretical, and many students cannot really apply what they have learned. Therefore, in college English classroom teaching, carry out group cooperation teaching, and strengthen students' English expression ability and English communication ability through English exercise in English communication situation.

The discussion enthusiasm of teachers and students in different grades obtained from the college English mixed flipped classroom teaching quality evaluation platform based on the fuzzy judgment model is in Figure 5. We can see that students and teachers of different grades have different enthusiasm for discussion after class. However, teachers' enthusiasm for discussion after class gradually decreases. For students, sophomores and junior students have the highest discussion enthusiasm, and the two situations are similar. Freshmen' enthusiasm for discussion after class is the second, and the worst is senior students. The main reason may be that teachers will actively discuss with students after class; with the increase in students' grade, students' autonomous learning ability is greatly improved, and teachers' enthusiasm for after-class discussion is reduced accordingly. Sophomores and junior students are in the heavy stage of learning English, and students pay more attention to participating in active discussion after class. Senior students have fewer English courses, and students generally do not pay attention to learning, which leads to the reduction of senior students' enthusiasm for after-school discussion. In order to improve the discussion enthusiasm between teachers and students in the mixed flipped classroom of college English, teachers should first assign relevant after-class discussion time, deliberately train students' after-class discussion ability, and then give full play to students' subjective learning ability, so that they are willing to participate in the after-class discussion.

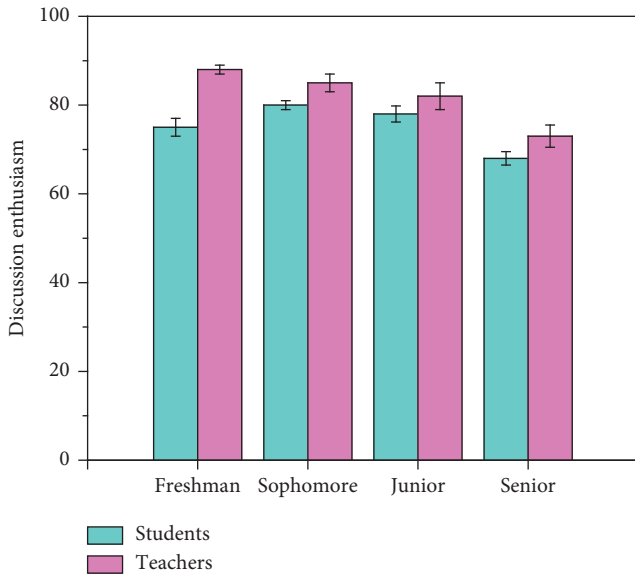


FIGURE 5: Discussion enthusiasm of teachers and students in different grades based on the fuzzy judgment model.

### 5. Application Measures of College English Mixed Flipping Classroom Teaching Quality Based on the Fuzzy Judgment Model

**5.1. Help Students Improve Their Cross-Cultural Communication Ability.** As an indispensable humanities course in the talent training program, we realize the organic unity of instrumental and humanistic nature of college English. Language is not only the carrier of culture but also an integral part of culture. At present, the instrumentality of college English has been widely recognized so that students can communicate in academic or professional fields in English in the future. Therefore, in addition to improving college students' five skills, we can master the cultural information behind the English language and understand the ways of thinking, values, and world outlook.

Figure 6 shows the improvement rate of communicative competence. We can see that the improvement rate of communicative competence of students in different grades has increased. Among them, sophomores and juniors have the highest improvement rate of communicative competence, followed by freshmen and seniors. The main reason is that the sophomore and junior students have mastered the basic college English learning methods and strong learning ability after years of study. As senior students are busy with graduation and the reduction of college English courses, the improvement rate of their communicative competence is the lowest. Freshmen need a slow adaptation process after the transition from high school to university. Therefore, the improvement rate of their college English communicative competence is slightly lower than that of sophomores and juniors. In short, in order to better promote the improvement rate of communicative competence in the college English mixed flipped classroom, students of different grades should be stimulated to have an interest in college English learning, the learning plan should be determined according

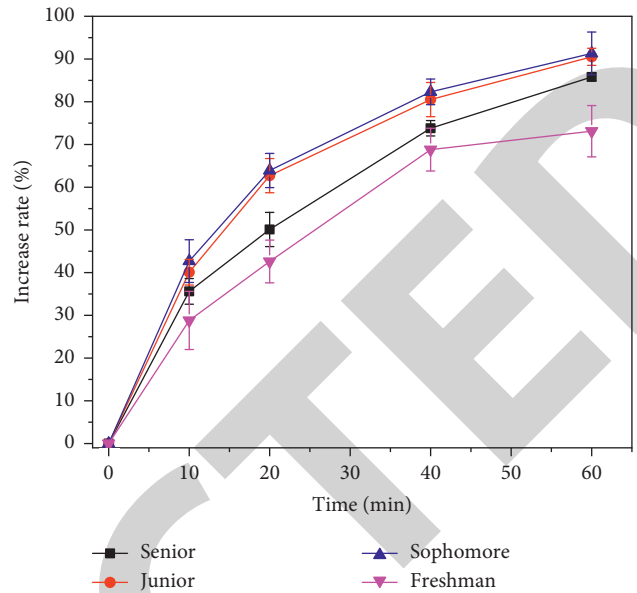


FIGURE 6: The improvement rate of communicative competence in college English mixed flipped classroom based on the fuzzy decision model.

to the students' learning conditions according to local conditions, and corresponding communicative competence training should be carried out to provide communication opportunities with well-known experts and scholars at home and abroad and expand their horizons, so as to achieve the purpose of better learning college English.

**5.2. Building a Diversified Curriculum Feedback and Evaluation System.** In flipped classroom, the main body of college English curriculum evaluation includes students and teachers. The evaluation object is not limited to offline classroom (traditional classroom) but presents diversified staggered evaluation methods such as online classroom, offline classroom, and peers (between students). The flipped classroom is multidimensional and comprehensive. In combination with the market's employment needs for college students, students' future career or further study, students' English level, school level, and other factors, based on the "Trinity" of students' front-line classroom, offline classroom, and hidden classroom after class, strengthen the weight of formative evaluation and consider students' individual differences, combining formative evaluation and summative evaluation organically, so as to form the best evaluation method, to improve the effect of college English teaching and achieve its teaching objectives. In addition, in flipped classroom teaching, due to the large number of students and the differences in learning ability and comprehensive quality of each student, in order to better evaluate students' learning, it is necessary to establish diversified curriculum feedback and evaluation system.

The online and offline hybrid teaching mode can fully absorb the advantages of the network learning platform and integrate the online network teaching and offline course teaching in the teaching stage. This can not only show the



guiding role of teachers in the teaching stage but also respect the current “student-oriented” requirements so as to better stimulate students’ initiative and creativity in learning English and better improve students’ comprehensive English quality. This kind of teaching mode can be better combined with students’ time and learning effect for gradual improvement, which can not only stimulate students’ autonomous learning ability but also improve their learning interest. At the same time, teachers can also adopt innovative teaching mode and use new media to transfer knowledge to students, which can not only improve students’ interest in learning but also better transfer the current best quality knowledge to students. In addition, teachers can constantly explore the advantages of flipped classroom during teaching so as to better provide guidance to students. Using new media technology can integrate the advantages of traditional blackboard teaching with the current form of online teaching, which can not only give play to the leading role of teachers in guidance, enlightenment, and monitoring but also fully mobilize students’ enthusiasm and initiative and finally achieve the purpose of improving the effect of education.

Figure 7 shows the evaluation system of college English mixed flipped classroom based on fuzzy decision model. It can be seen that there are three evaluation systems: offline classroom, online classroom, and invisible classroom after class. For students, the proportion of hidden classroom after class in college English hybrid flipped classroom based on the fuzzy decision model is relatively high, followed by offline classroom and online classroom. This is mainly because students like to discuss and study college English content in the hidden classroom after class. The favorable learning environment of offline classroom can also promote students to learn. However, online classroom lacks communication, which leads to the reduction of its proportion. For teachers, they pay more attention to offline classroom, followed by online classroom, and the proportion of invisible classroom after class is the lowest. The main reason is that teachers communicate with students offline, while teachers can analyze with their classmates through online classroom, so its proportion is also the lowest. In order to better improve the communication and learning of college English between teachers and students, so as to provide a good opportunity for the joint learning of college English between teachers and students, college English is a very important basic language course in the education system of colleges and universities. At this stage, the teaching of college English courses mainly focuses on the teaching of theoretical knowledge, ignoring the cultivation of students’ practical ability. The reform of the college English blended teaching mode under the background of flipped classroom can help the teaching of college English teaching, effectively strengthen the combination of online teaching and offline teaching, and obtain a continuous improvement of the effect of college English teaching. For students, they should make rational use of the learning time in the hidden classroom after class, give full play to their active learning ability, and listen carefully in the offline classroom to reduce unnecessary online classroom learning. For teachers, offline

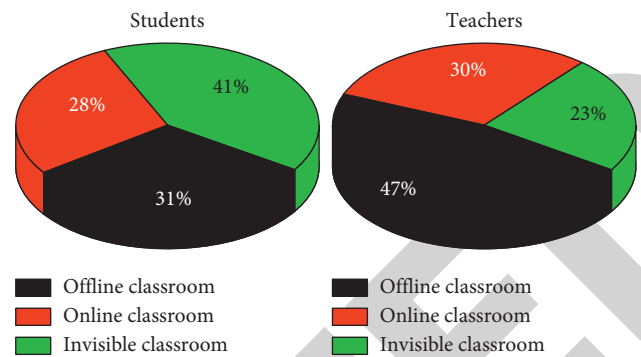


FIGURE 7: Mixed flipped classroom based on the fuzzy judgment model.

classroom teaching is very important. They should arrange more offline classroom teaching time. Secondly, they should improve the teaching ability of online classroom and reduce unnecessary hidden classroom teaching after class.

## 6. Conclusion

Through the detailed comparison of the fuzzy judgment model and the detailed analysis of various indicators affecting the teaching quality of college English hybrid flipping classroom, this paper establishes a college platform. Finally, the platform is applied to the evaluation quality in different grades, and good results are obtained. The results indicate the platform based on the model judgment model can evaluate and analyze college English between different teachers, predict and analyze the English learning results, and obtain the development and progress of college English.

## Data Availability

The experimental data used to support the findings of this study are available from the author upon request.

## Conflicts of Interest

The author declared no conflicts of interest regarding this work.

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