

Construction and Verification of Formative Assessment System for College English Courses based on Intelligent Teaching Cloud Platform

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Abstract. The rapid development of information technology has promoted the arrival of the “big data era”. The advent of this era and the development of mobile technology provide certain technical support for formative assessment. Aiming at the problems existing in the current assessment methods of college English courses in military academies, this paper tries to put forward ideas and plans for curriculum assessment reform with the focus on improving the formative assessment mechanism. Meanwhile, taking 100 undergraduates of a military academy as the research objects, the formative assessment system of college English courses based on the intelligent teaching cloud platform is applied to the assessment of college English courses. The feasibility and effectiveness of the formative assessment system in college English teaching are verified by the experiment of online and offline blended teaching.

Keywords: Intelligent teaching cloud platform; College English; Curriculum assessment reform; Establishment of formative assessment system

1 Introduction

The era of big data has brought great changes to people’s lifestyles and ways of working, and the education industry has also been greatly affected. The most obvious change is that mobile learning and online learning have become an integral part of education, which is particularly prominent in university education.[1] Under this background, the extensive application of information technology in teaching not only enriches teaching means, but also expands teaching resources. Teachers can use more resources in the teaching process, and students can learn more knowledge in the learning process. It is of great significance to improve the effect of college English teaching.

As a general foundation requisite, College English is an important part of the curriculum system of higher education personnel training, and its assessment method determines the effectiveness of students’ English learning to some extent.[2] However, the assessment system of college English courses in military academies has always paid too much attention to the test of students’ English language knowledge, but ignored the test of students’ English language skills. This paper tentatively proposes ideas and plans for college English course assessment reform, constructs a new formative assessment system based on the intelligent teaching cloud platform,

and discusses the feasibility of this system for promoting college English learning from the aspects of students' classroom performance, CET-4 scores and acceptance of this system.

2 The necessity of establishing a formative assessment system for college English courses

2.1 Problems existing in the curriculum assessment system at this stage

The College English course is a compulsory course with a total learning cycle of 220 class hours in four semesters. According to Military Academy Education Outline (SZ-JC-03) issued by the Training and Management Department of the Central Military Commission in September 2019, the assessment of college English courses must include two parts: formative assessment and summative assessment, of which the proportion of formative assessment is not less than 40%. [3] In the current assessment system, formative assessment accounts for 40%, including four items, such as attendance, preview before class, homework and oral test, with the same proportion of scores for each item, and summative assessment accounts for 60%. Although the assessment system conforms to the regulations of the Training and Management Department, on the basis of summarizing the previous teaching experience, the teaching team unanimously believes that the original formative assessment system is difficult to accurately reflect the effect of students' language acquisition, cannot effectively promote the enthusiasm of students' independent learning, and will make some students ignore the training of process learning and independent learning ability

2.2 Purpose and significance of the establishment of formative assessment system for college English courses

In October 2020, College English Teaching Guide (2020 edition) was officially released. The Guide clearly points out that the goal of college students' English proficiency test is to build a comprehensive assessment system that combines formative assessment and summative assessment, that is, not only to comprehensively monitor and track the development of college students' English proficiency and accurately evaluate the level of college students' English proficiency according to the college English teaching objectives and teaching requirements determined in the Guide, but also to give full play to the positive guiding role of assessment in teaching, make it provide better diagnosis and feedback information for teaching, and promote the overall improvement of college students' English ability. [4] The advent of the era of big data and the development of mobile technology provide certain technical support for formative assessment. At present, many colleges and universities have implemented different forms of college English blended teaching practice based on information technology. Under this new teaching mode, it has become very necessary to explore how to use information technology to build a formative assessment system that reflects teaching and learning, promote a multi-stage evaluation mode, and promote the further development of blended teaching.

3 Ideas and plans for the construction of formative assessment system for college English courses

3.1 Ideas for constructing curriculum formative assessment system

The assessment reform of this course aims to reconstruct the assessment system, make full use of the rich teaching resources of the intelligent teaching cloud platform, and redesign and adjust the traditional formative assessment scheme by making full use of the three links from input to output to feedback, which are fast and smooth regardless of time and space constraints, and closely integrate the implementation process of classroom teaching plans.[5] At the same time, the intelligent teaching cloud platform is used to arrange the content of formative assessment in a reasonable and orderly manner, collect the data and indicators obtained from the assessment in a timely manner, and constantly make adjustments, so as to enrich the assessment elements and means, build a more diversified, reasonable and effective new formative teaching assessment system, and finally achieve the goal of improving and optimizing the entire college English course teaching assessment system. Specific ideas are as follows:

First, adjust the ratio of formative assessment and summative assessment. The formative assessment will be increased from 40% to 60% of the comprehensive score, and the summative assessment will be reduced from 60% to 40% of the comprehensive score.

The second is to adjust and optimize the content and methods of formative assessment. The assessment content will cover listening, speaking, reading, writing and translation to more comprehensively and objectively evaluate the students' learning in the whole learning stage. In addition to the assessment of students' classroom performance (6%) and notes (3%), the assessment content of exercises and oral tests has been detailed and classified. Exercises are divided into online homework (9%) and offline homework (9%) according to the way homework is published. The oral tests are focused on different test content. There are two types: task-based speaking test (9%) and communicative speaking test (6%). In addition, in-class test (6%) and mid-term test (12%) have been added.

Third, change the subject of assessment. From the "absolute assessment of teachers" to "teacher assessment as the main, student self-assessment and peer assessment as the supplement", to ensure the comprehensive and objective assessment.[6]

3.2 Curriculum formative assessment system construction scheme

3.2.1 Formative assessment structure design

The specific formative assessment structure design and proportional distribution of each assessment content are shown in Table 1:

Table 1. Formative assessment composition table

Formative assessment system (Accounting for 60% of the overall score of the course assessment)	Assessment content	Proportional distribution
	Classroom performance	6%
	Notes	3%
	Online homework	9%
	Offline homework	9%

	Task-based speaking test	9%
	Communicative speaking test	6%
	In-class test	6%
	Mid-term test	12%

3.2.2 Formative assessment scoring standards

1. Classroom performance

The full score of class performance is 100 points, accounting for 6% of the overall grade. According to the students' performance in the class, the teacher will give corresponding grades according to the grading reference standards. The grading reference standards are shown in Table 2.

Table 2. Reference criteria for class performance

Number	Grading reference standards	Scores
1	Listen carefully, full of spirit, can actively raise hand to answer questions, the rate of correct questions is high.	90-100
2	Listen carefully most of the time, can raise hand to answer questions, answer questions partially correctly.	70-89
3	Not listening carefully, occasionally distracted, rarely raise hand to answer questions, not expressing their own views.	60-69
4	Dozing off in class, distracted, not raising hand to answer questions, not expressing their own views.	0-59

2. Notes

The full score of the notes is 100 points, accounting for 3% of the overall grade. According to the students' usual class notes, the teacher will give corresponding grades according to the grading reference standards. The grading reference standards are shown in Table 3.

Table 3. Reference criteria for notes

Number	Grading reference standards	Scores
1	The handwriting is neat, the logic is clear, and the notes outline is easy to understand; The record of classroom content is concise and clear, with high accuracy and strong summarization; The content form is novel, with high innovation.	80-100
2	The handwriting is not very neat, the logic is general, and it is easy to read; The record of the classroom content is relatively complex and simple, with average accuracy and general conclusion; The content form is not innovative enough.	60-79
3	The handwriting is sloppy, the logic is not clear, and it is difficult to read; The record of classroom content is mixed, with poor accuracy and no conclusion; The content form is not innovative.	0-59

3. Online homework

The full score of the online homework is 100 points, accounting for 9% of the overall grade. Students' scores of listening, writing, translation, reading and other assignments submitted online will be directly scored by the system of intelligent teaching cloud platform, and the system will convert the scores of each online homework in the whole semester to give an

average score. Students can find their shortcomings in English learning according to the comprehensive evaluation results and single task evaluation results provided by the system in a timely manner, and then carry out targeted learning.

4. Offline homework

The full score of the offline homework is 100 points, accounting for 9% of the overall grade. According to the completion of students' offline homework, the teacher will give corresponding grades according to the grading reference standards. The grading reference standards are shown in Table 4.

Table 4. Reference criteria for offline homework

Number	Grading reference standards	Scores
1	Complete mastery of knowledge points, strong comprehensive language application ability, proficient in searching relevant materials, strong self-learning ability, and great homework completion;	90-100
2	Basic grasp of knowledge points, certain language application ability, good at searching relevant information, good self-learning ability, and good homework completion;	70-89
3	Understanding of knowledge points, able to find relevant materials, average self-learning ability, and average homework completion;	60-69
4	Unable to understand the knowledge point, unable to find relevant materials, poor self-learning ability, and poor homework completion;	0-59

5. Task-based speaking test

The full score of the task-based speaking test is 100 points, accounting for 9% of the overall grade. The test will take the form of a group presentation or speech on a topic. Teachers' assessment is the main method, students' self-assessment and students' peer assessment are the auxiliary methods, and corresponding grades are given according to the grading reference standards. That is, task-based speaking test score = teachers' assessment score ×50%+ students' self-assessment score ×25%+ students' peer assessment score ×25%. The grading reference standards are shown in Table 5.

Table 5. Reference criteria for task-based speaking test

Evaluation dimension	The grading reference standards	Scores (Full score: 100)	Teachers' assessment	students' self-assessment	students' peer assessment
Expression content	Clear theme, prominent center, clear logic, complete structure; epochal content; open-minded and innovative idea.	40			
Language ability	Fluent language, smooth expression, full of appeal; good intonation, clear pronunciation; using precise and vivid words.	40			
Speech skills	Pay attention to body language and eye contact; appropriate use of rhetoric to add color to the article; full of feelings, good typhoon.	20			

6. Communicative speaking test

The full score of the communicative speaking test is 100 points, accounting for 6% of the overall grade. The form of the test is simulated dialogue or role play. Teachers' assessment is the main method, students' self-assessment and students' peer assessment are the auxiliary methods, and corresponding grades are given according to the grading reference standards. That is, task-based speaking test score = teachers' assessment score \times 50%+ students' self-assessment score \times 25%+ students' peer assessment score \times 25%. The grading reference standards are shown in Table 6.

Table 6. Reference criteria for communicative speaking test

Evaluation dimension	The grading reference standards	Scores (Full score: 100)	Teachers' assessment	students' self-assessment	students' peer assessment
External image	The dress is elegant, and the posture is steady.	10			
Stage performance	The performance is vivid, natural and infectious.	20			
Language ability	The voice is loud, the pronunciation is clear, the intonation is rhythmic, full of emotion.	30			
Script content	The plot is complete and coherent, the logic is clear, and the content is positive.	30			
Teamwork	Good coordination, effective use of communication skills and flexibility.	10			

7. In-class test

The full score of the in-class test is 100 points, accounting for 6% of the overall grade. The specific implementation is divided into 5 times, each time a full score of 20 points. The question types are objective questions such as choice and fill in the blank, and the scoring criteria are based on the answers attached to the question types.

8. Mid-term test

The full score of the mid-term test is 100 points, accounting for 12% of the overall grade. The assessment will be conducted once per semester. The test form is the Internet online test, the question type refers to the setting of CET-4 and CET-6, and the scoring standard is based on the answer attached to the question type setting.

4 Practice and verification of formative assessment system for college English courses based on intelligent teaching cloud platform

According to the newly designed formative assessment system, it is necessary to carry out corresponding reform and practice in college English teaching, and change the former offline teaching mode with teachers as the main body and students passively participating in the classroom to the student-centered online and offline blended teaching mode.[7] The multi-stage course assessment is realized through the three links of pre-class, in-class and after-class by

alternating online and offline. In addition, the in-class test, mid-term test and final test are combined to make a reasonable and effective assessment on the participants' participation, initiative, content mastery and phased learning effect in the complete course learning process. The multi-stage course assessment process is shown in Figure 1:

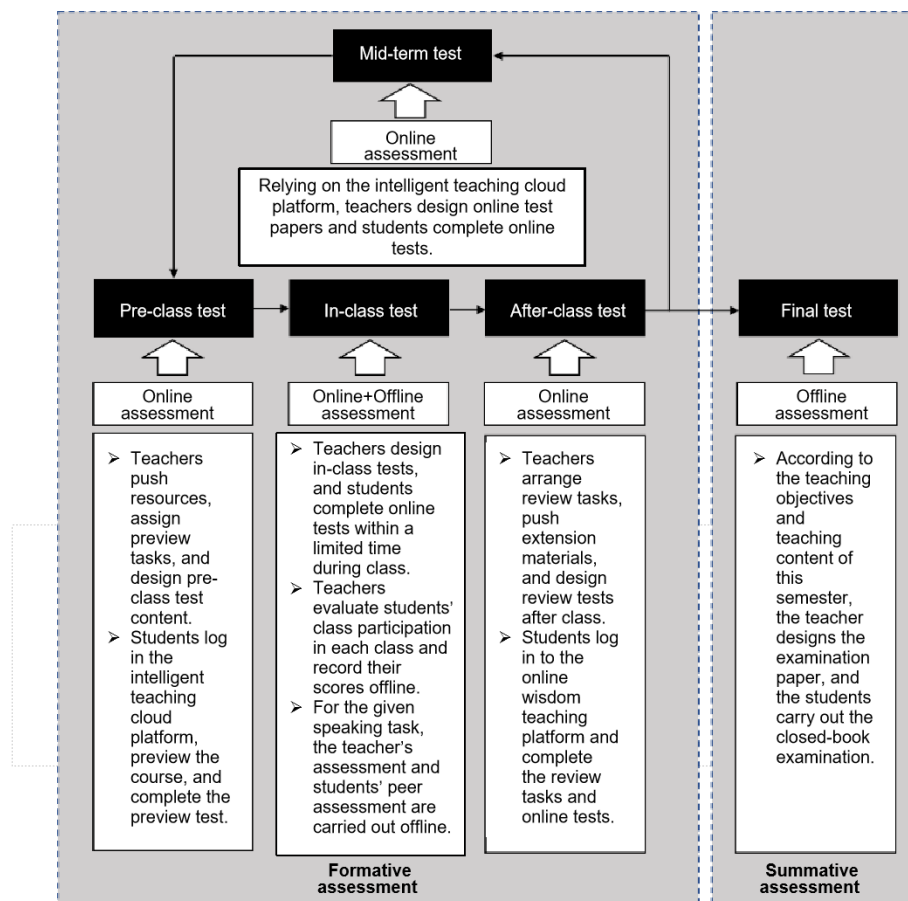


Fig. 1. Multi-stage process of course assessment

4.1 Experimental design and method

4.1.1. Research questions

The experiment teaching was carried out for the students of 4 undergraduate classes. The purpose of this study is to explore the assessment effect of the formative assessment system of college English courses based on the intelligent teaching cloud platform in college English course assessment and its positive role in teaching. Specific research questions are as follows:

- 1) How well do students accept the formative assessment system of college English courses based on the intelligent teaching cloud platform?

2) Can the newly constructed formative assessment system make a reasonable and effective evaluation of students?

3) Does the formative assessment system of college English courses based on the intelligent teaching cloud platform play a positive role in college English teaching?

4.1.2 Research objects

The subjects of this experiment are about 100 first-year undergraduates majoring in communication engineering from 4 classes of Grade 2022 in a military academy, which are respectively Class A, Class B, Class C and Class D. The English level of the students in the four classes is similar and poor.

4.1.3 Research design

In order to proceed the experiment and teaching smoothly, the textbooks used in this semester are New Horizons College English Reading and Writing Course 2 (3rd Edition) and New Horizons College English Viewing, Listening & Speaking Course 2 (3rd edition). Units 1 to 5 of the two textbooks are selected as the teaching content respectively. Through the simultaneous collection of learning data information of intelligent teaching cloud platforms such as Unipus online platform and Rain Classroom, this paper makes an objective and reasonable analysis of the feasibility of intelligent teaching cloud platform for monitoring and evaluating students' classroom learning effects from both quantitative and qualitative perspectives. At the same time, this experiment also established personal learning files, recording materials, written exercises and class performance records for the subjects. Various research methods such as questionnaire survey, classroom observation and one-on-one interview were used to collect materials or data of the subjects, and the data obtained was compared and analyzed with the data before the experiment.[8] For example, the classroom performance table in the formative assessment system is used to truthfully record the performance of the subjects; the results of students participating in the CET-4 examination are collected and analyzed; student questionnaires on teaching effectiveness based on the formative assessment system are issued, recycled and analyzed.

4.2 Comparative analysis of teaching experiment results

4.2.1 Comparison of students' classroom performance

Through the implementation of student-centered online and offline blended teaching and the adoption of formative assessment system, the data of the classroom performance records of the two semesters before and after show that: The latter is recorded in the second semester of the freshman year (the second semester of the 2022-2023 academic year, after the full implementation of the experimental teaching and formative assessment system), the breadth, quantity and intensity of students' participation in classroom activities (the number and frequency of individual participation), and the quality of participation (the quality of individual or group participation in class performance, including accuracy, comprehension and oral expression ability, which is represented by four levels: Excellent, Better, Good, and Pass), are also significantly improved, as shown in Table 7[9].

Table 7. Comparison of students' class participation degree and quality

Item Class	The number of participants		The breadth of participation		The quality of participation							
	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1				Semester 2			
					E	B	G	P	E	B	G	P
Class A	30	138	21	26	1	2	2	25	13	21	15	89
Class B	22	125	15	21	0	4	3	15	10	14	25	76
Class C	27	133	15	22	3	2	3	19	15	24	14	80
Class D	32	145	20	25	3	1	2	27	23	32	19	71

4.2.2 Comparison of CET-4 scores of students

Based on the questionnaire survey and the scores of students participating in the CET-4 test in June 2023, the authors found that the formative assessment system of college English courses based on the intelligent teaching cloud platform played a positive role in college English teaching, and students' English application ability was improved. The comparison is made from two aspects: (1) The comparison of two semesters in the experimental class; (2) Comparison between experimental class and control class.

It can be clearly seen from the Figure 2 that the scores of four classes in the second semester (June 2023) were significantly higher than those in the first semester (December 2022). Among them, the most significant are Class A and Class D, which are 14.8 and 22.2 percentage points higher than that in December 2022, respectively, and these two classes are also two classes that actively participate in classroom interaction, which proves from one aspect that students' participation in classroom activities contributes to the improvement of students' CET-4 scores.

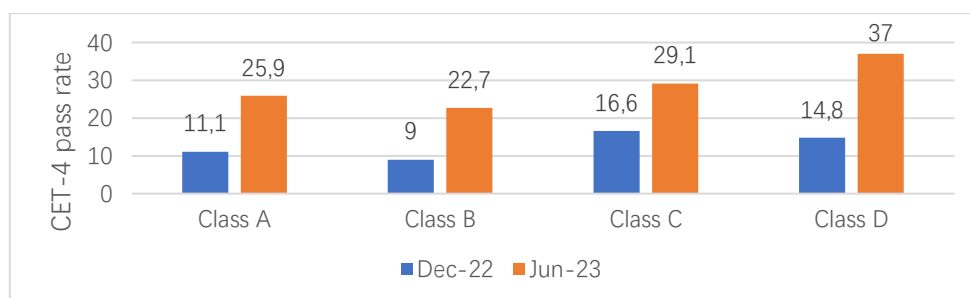


Fig. 2. Comparison of CET-4 pass rate in two experimental classes

The four comparison classes are all students majoring in communication engineering, and the English level of students majoring in the same department is similar, so the comparison is more comparable. As can be seen from Figure 3, the passing rate of students in the four classes of the experimental class is basically higher than that of other control classes, especially the one-time passing rate of class D of the experimental class is 8.1 percentage points higher than that of the control class. From this, we can see the teaching effect, that is, student-centered online and offline blended teaching is conducive to the application of the assessment system and to improving students' English skills and application ability.

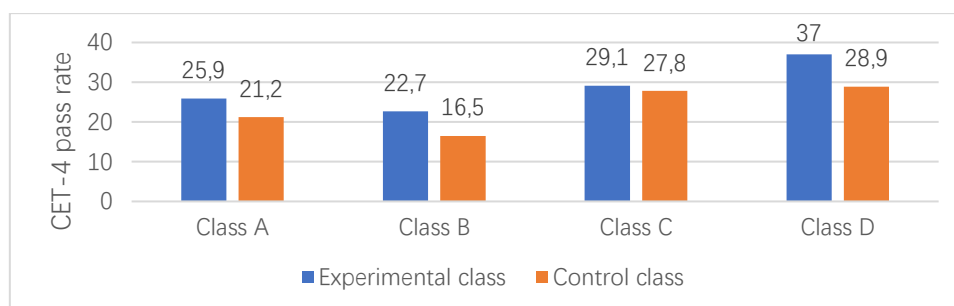


Fig. 3. Comparison of CET-4 pass rate between experimental class and control class in June 2023

4.3 Analysis of questionnaire survey results

This questionnaire survey is designed to understand students' acceptance of the formative assessment system of college English courses based on the intelligent teaching cloud platform and its assessment effect. When setting up the questionnaire, our requirement is that if 60% of the students scored in section A (the questionnaire does not tell students the scores of each option), the assessment system is successful. The questionnaire survey was conducted online, with 97 participants from the experimental class (3 participants did not participate) and 97 valid questionnaires. The specific results are shown in the tables.

Table 8. The proportion of students in each scoring section

Class Scoring section	Class A	Class B	Class C	Class D	Total	Percentage
Section A	18	17	14	16	65	67%
Section B	7	5	8	9	29	29.9%
Section C	0	0	2	1	3	3.1%

Table 9. The number of students in each option of each question

Questions Options	1	2	3	4	5	6	7	8	9	10
Option A	82	24	33	32	32	64	74	85	46	37
Option B	13	58	42	57	49	26	23	10	34	55
Option C	2	15	22	8	16	7	0	2	17	5

According to the results in Table 8 and Table 9, 67% of the students got section A. There are 82 students (84.5%) who "support and actively participate" in the implementation of the evaluation system and teaching, and 65.9% of the students think that the assessment system and teaching mode are "beneficial" to improve their communication and collaboration ability. 76.3% and 87.6% of the students believe that the formative assessment system and the student-centered online and offline blended teaching mode are obviously better than the summative assessment and traditional teaching. Therefore, we can basically demonstrate that the formative assessment system and the student-centered online and offline blended teaching mode are successful, recognized and supported by students, and are feasible and effective. In addition, the questionnaire also shows that students' autonomous learning ability has been strengthened: 59.8%

believe that the implementation of the assessment system has increased the time they spend on English learning after class, 77.3% of the students choose the assessment system and the teaching “can” or “can” improve their enthusiasm to participate in class activities, 58.8% of the students think that the assessment system and the teaching are “helpful” to improve their autonomy in learning English. 33% think it is “very helpful”. To the question of “whether the assessment system and teaching will help you to provide a plan for learning English”, 33% and 50.5% of students think it is “very helpful” and “helpful”.

In addition, 20 students (10 female students and 10 male students were interviewed for about 15 minutes) were selected for one-to-one interviews. The interview outline included their overall views on the application of the newly constructed formative assessment system in college English, its advantages and disadvantages, personal benefits, factors affecting the assessment system and suggestions for optimization.

The effectiveness of the formative assessment system is further verified through student-centered online and offline blended teaching experiments. The biggest feature of the formative assessment system is to promote and cultivate students’ independent learning ability, so that students can learn to study, think, cooperate, and communicate in the process of completing tasks. Students can independently determine their own learning purpose, learning objectives, learning content and methods, and evaluate themselves through a series of assessment systems, so as to improve the learning efficiency and obtain the best learning effect.

4.4 Results and Findings

Through the comparison of the above experimental results and questionnaire survey, the following conclusions can be drawn:

Firstly, more than 80% of the students have a positive attitude towards the formative assessment system of college English courses based on the intelligent teaching cloud platform, believing that the assessment system can effectively promote college English teaching, such as learning efficiency and independent learning ability.

Secondly, the newly constructed formative assessment system can greatly stimulate students’ interest in learning, make students more willing to participate in class activities and actively complete extracurricular tasks. At the same time, the formative assessment system can quantify students’ classroom participation and make immediate and effective evaluation of students.[10]

Thirdly, the formative assessment system based on the intelligent teaching cloud platform and the integration of student-centered online and offline blended teaching of college English can realize the integration before, during and after class, which is helpful to improve students’ interest in college English learning and application ability.

5 Conclusion

The teaching reform of College English course is a new attempt in the field of English teaching in military academies. In order to improve the teaching effect and teaching quality of this course, it is necessary and meaningful to reform the evaluation mechanism by giving full play to the positive effect of diversified assessment on teaching and integrating it into one. Based on the

intelligent teaching cloud platform, the formative assessment system is reconstructed and the student-centered online and offline blended teaching mode is applied in college English teaching. After one year of experimental teaching, the results show that the formative assessment system can effectively promote the cultivation of students' independent learning ability, thereby improving students' CET-4 scores and improving teaching quality. All in all, the experiment proves that the formative assessment system is feasible, effective, and successful with sufficient data and rich and detailed records. It fills the gap in the college English assessment system of our college, and has positive theoretical and practical significance for improving the college English curriculum system of our college. The assessment system has great practical significance and implementation value.

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