Formative assessment system of multimedia-based college English teaching using constructivism theory

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ABSTRACT: Teaching assessment is an important guarantee of improving higher education quality, an integral part of the teaching process and an important means in promoting teaching activities. Popularisation and computerisation of higher education demand more from college English teaching, while the course assessment system is unreasonable, imperfect and unscientific. In this article, the status of a college English teaching assessment system is introduced, and a formative assessment system of multimedia-based college English teaching is constructed, conducive to enhancing students' motivation in English learning, promoting them to optimise learning strategies and effectively developing their practical English ability. Also, student-centred experimental research was conducted on a formative assessment system, and proposals are made that sound assessment mechanisms, more complete systems of teaching management and credit management must be established, with the incentive mechanism improved to solve problems that constrain teachers in implementing formative assessment. Teachers are encouraged to participate in formative assessment reform.

INTRODUCTION

College English Curriculum Requirements, issued by the Ministry of Education in 2007, proposed comprehensive, objective, scientific and accurate assessment models be established to help students quickly improve integrated English abilities and achieve the best learning outcomes. Years of teaching experience have shown terminal assessment does not fully test students' spoken English ability, so it is imperative to introduce formative assessment.

Since the 1990s, the Secondary Education Committee of the United Kingdom adopted assessment methods based on routine teaching in schools and considered that the methods can measure some academic achievements that cannot be easily or adequately obtained from terminal examinations. In 1984, Australian scholar McGaw proposed that formative assessment can sample students' academic achievements according to the content of the curriculum and the teaching plan and, thus, was more comprehensive than external examinations in education evaluation [1].

Relevant articles on formative assessment in China did not appear until the late 1990s. Formative assessment has been strongly emphasised in English teaching of primary and secondary schools in China and widely practised. Related research on formative assessment practices in college curricula were quite numerous in recent years. However, the overall research level is quite weak in two ways. First, research is not normative. The data acquisition and interpretation of many survey reports or research reports are not scientific, with weak logic and rigour in demonstrating progress and even no basic paradigm of writing. Second, the main journals bearing these reports are journals of radio and TV universities at all levels, among which only 17 articles have been published in core periodicals.

Based on constructivism theory and an in-depth analysis of existing assessment methods, teaching and learning processes of non-English majors are tracked to explore the application value of formative assessment in multimedia-based college English teaching. Research results will be conducive to the transformation of the concept of education and the teaching pattern of college English and will, to a certain extent, develop constructivism theory and formative assessment theory.

STATUS OF THE COLLEGE ENGLISH TEACHING ASSESSMENT SYSTEM

The existing college English assessment system in China still largely remains in the stage of objective testing and educational measurement, which ignores the implicit learning outcomes and skills and emotions, attitudes and learning strategies, as well as participation and the spirit of co-operation reflected in the learning process. Traditional teaching assessment is focused on results rather than process and ignores the students' dynamic characteristics in the learning process [2].

Single Assessment Body

From the perspective of an assessment body, current college English teaching still has the problem of simplification by ignoring multiple assessment bodies, and the assessment model of multi-agent participation and interaction. Assessment bodies are mainly teachers or associated teaching administrations, while students as the assessment subject are in a passive position and rarely participate in the assessment process. Therefore, a liberal and open assessment atmosphere should be established to encourage students to be concerned about, and get involved in, assessment to achieve the diversification of assessment bodies, and give full play to students' subjectivity, initiative and creativity in the study.

Simple Assessment Method

Current college English teaching relies too much on terminative assessment based on quantifiable examination results, with midterm examinations, final examinations, CET-4 and CET-6 (College English Test) as the main assessment means. To pursue the pass rate for CET-4 and CET-6, the administrative departments of many colleges and universities even regulate that only students who have passed CET-4 and CET-6 can get degrees and diplomas. In recent years, many native scholars began to attach importance to such an assessment system, in particular, the wash-back effect of the unified CET-4 and CET-6 examinations. They have carried out research on the negative effect of the existing assessment system on students, teachers, the education system and even the whole society, and have appealed to educators to reform the assessment system.

Weak Assessment Function

At present, the drawbacks of the college English assessment system are more obvious in the multimedia-based teaching mode, because the traditional teaching method in which teachers teach and students listen passively has been changed. Due to different degrees of acceptance, individualised learning should be conducted and progressed by networking. However, the relative segregation of teachers and students in the multimedia-based college English teaching mode greatly reduces teachers' face-to-face monitoring of students. Learning entirely depends on students' motivation, self-awareness and self-control, and the learning largely depends on their independent learning ability and self-monitoring capabilities. Since enthusiasm is difficult to maintain in students, learning quality assessment mechanisms must be relied on to continuously inspire students' enthusiasm and vigour to ensure learning quality.

CONSTRUCTING A FORMATIVE ASSESSMENT SYSTEM FOR MULTIMEDIA-BASED COLLEGE ENGLISH TEACHING

As for the above-mentioned problems, the characteristics and functions of formative assessment imply the necessity of its implementation. Formative assessment is a means to develop a student's potential, identify learning problems and develop learning strategies. From the needs of both assessors and students, formative assessment emphasises not merely the teaching process, but also the learning process, and insists on multi-assessment as being of great importance to teacher-student interaction and cultivating students' language ability. This helps develop self-learning abilities and learning strategies and, thus, improves teaching quality to meet the requirements of students.

Assessment methods of college English teaching currently used in this University have been improved and focus on English learning. According to the students' performance in multimedia-based college English learning, comprehensive assessment is conducted of the learning process, attitudes, strategies and effects [3]. Formative assessment of multimedia-based college English teaching mainly involves three modules i.e. students' portfolios, teachers' observation records and assessment archives of learning effects, as shown in Figure 1.
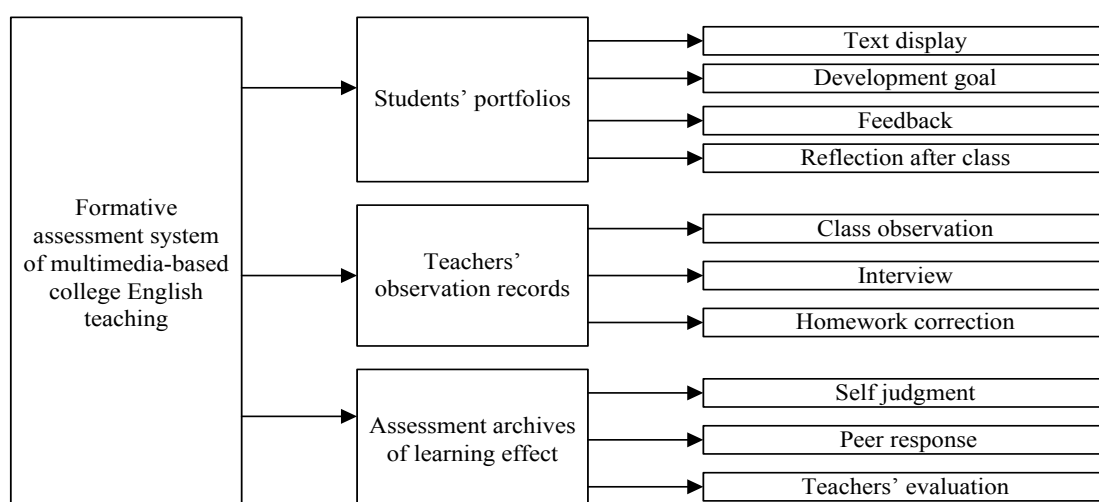

Figure 1: Formative assessment system of multimedia-based college English teaching.

The main function of students' portfolios is to record in detail students' learning, to demonstrate the effort made, and to record progress and achievements. It is a student's written record of development goals, feedback and reflection after class. The portfolio records students' learning, such as a topic report, drama performance and role-play [4]. Development goals are the expected goals a student established with the teacher's assistance at the beginning of a new semester. Feedback includes tests and learning records that reflect students' study, as well as the comments of students, groups and teachers during different periods. Feedback of formative assessment should come from not only teachers, but also peers and students themselves. Peer feedback comes from different levels. Co-feedback of teachers and peers can be a perfect complement, while students' self-feedback includes self-assessment and monitoring.

There are three characteristics that enable students to benefit from feedback. These are: 1) they are clear about goals; 2) they compare their actual performance with the goals; and 3) appropriate methods are used to achieve goals. Therefore, any effective feedback of teaching assessment must take clear teaching goals as a precondition. Teachers should develop clear teaching goals to improve feedback quality, to ensure that students can understand the feedback and, meanwhile, to cultivate students' self-assessment. Reflection after class means that a student considers the learning effects of multimedia-based college English teaching at a certain stage to provide timely feedback and help develop self-learning.

Teachers' observation records mainly refer to teachers' classroom observations, interviewing students and students' performance on homework. Classroom observation mainly includes classroom questioning and diagnostic testing. In the teaching process, teachers can understand all kinds of students' information in the learning process through occasional classroom questions about unclear concepts or incorrect learning methods and so on. In addition, teachers can use a number of diagnostic tests to help study students' understanding and mastery of knowledge in order to adjust teaching methods and measures.

The interviews of students by teachers are the most important part of teachers' observational records. Teachers can each week spend some time interviewing students in groups or individually, to understand their learning progress, performance on learning tasks and problems in learning. Meanwhile, they record assessment results by stage of students' learning and make recommendations for further study. Yorke pointed out that the assessment process had an impact on implementers and recipients [5]. In various exchanges between teachers and students, teachers could obtain information on students' performance, and even learning methods and process. They should regularly revisit and record students' performance on homework, which requires that they be concerned about each student's development and any changes to keep abreast in a timely way of students' needs, and to guide them in learning methods and strategies [5].

The learning effect should be assessed on three dimensions: students' self-judgment, peer response and teachers' evaluation. Students' self-judgment focuses on interest in learning, attitudes, strategies, participation, co-operation and development of oral English, and it provides a chance for them to engage in a continual process of reflection, improvement and self-improvement in order to, finally, get a comprehensive correct assessment. In the process of multimedia-based college English teaching, students must be urged to conduct self-assessment of their capabilities in listening, speaking, reading, writing, translation and so on. Students' self-judgment can provide teachers with extremely useful information about them, so that students have a basic understanding of their own language skills, understand their strengths and weaknesses, and determine direction and development goals. Peer response can be based on the following criteria: enthusiasm of team members and ease of communication, and satisfaction at task completion.

In the beginning, teachers can provide necessary assessment criteria and tools, and demonstrate how to assess an activity. Assessment criteria also can be determined through co-consultation of teachers and students. Students' self-judgment and peer response can make up for the shortage of external assessment, such as teachers' evaluation, and encourage independent learning and collaborative learning. Teachers' evaluation can be conducted through observing how students demonstrate their ability in applying the English language, discuss with others during team activities and solve problems. Assessment by the teacher of students' learning styles and methods can promote the completion of learners' programmes and tasks within the specified time, and stimulate learners' enthusiasm to take the initiative to acquire knowledge and carry out creative learning.

Teachers should give full play to their leading role in teaching and demonstrate learning methods and assessment methods to students, as well as organising and guiding students to collect and edit archive materials. They also should help students to carry out self-assessment and peer assessment, to improve their ability in multimedia-based college English learning.

STUDENT-CENTRED EXPERIMENTAL RESEARCH ON THE FORMATIVE ASSESSMENT SYSTEM

Based on the above assessment system, corresponding reform of college English teaching must be made to change teacher-centred teaching into a student-centred one and, thus, students can upgrade their language skills and professional ability in the process of individual, team and group working [6]. Experimental teaching was carried out on the students of four classes of 2009 undergraduates.

Experiment Design and Methods

The experimental subjects were 184 students in Grade 2 from four (4) classes of 2009 undergraduates in the College of Mechanical and Electrical Engineering and College of Resources and Environmental Engineering. Included were 88 students majoring in measurement control and instruments from the College of Mechanical and Electrical Engineering, i.e. Class A and Class B, and 96 students majoring in mineral processing engineering from the College of Resources and Environmental Engineering, i.e. Class C and Class D. The level of English of students majoring in measurement control and instrument was slightly higher those majoring in mineral processing engineering.

In order that experiment and teaching can be conducted smoothly, experimental materials were taken from Unit 1 to Unit 6 in the New Century College English Book 4: Comprehensive Reading. Specified units were understood and digested by students in groups and presented in class, which lead to a debate about achieving the goal of language application.

Students of each class volunteered to join one of several learning groups of two (2) to four (4) students where they prepared for learning tasks assigned. They discussed in groups the problems encountered during the learning process and how problems were solved through discussion and debate. If team members were unable to find a solution to a problem, they could request assistance from other learning groups. Meanwhile, the discussion results presented by the group also could be questioned by other group members. The teaching principle was to solve the problems by students' exploration and debate.

Since experimenters were directly involved in the usual experimental teaching rather than as temporary testers, the teaching and learning environment of the entire experiment was conducted in a relaxed and natural way. Extra-curricular learning records and classroom teaching observation records were produced and, then, a lot of authentic data were obtained and analysed to compare with the data before the experiment.

Through records of experimental teaching and extra-curricular learning, the personal learning files, test recording materials, written exercises and classroom performance record sheets were produced. Using the classroom observation sheet in the formative assessment system, the live performance of the subjects was accurately recorded. The on-site performance of the group of subjects participating in the discussion was recorded and a visual record kept. Written exercises were corrected and students' scores on CET-4 were collected and compared. Finally, students' feedback from the questionnaire survey of the teaching effect based on the formative assessment system was distributed, collected and analysed.

Comparative Analysis of the Teaching Experiment Results

The formative assessment system, an important means by which to ensure teaching quality and cultivate students' ability plays a positive role in the smooth implementation of experimental teaching. The assessment system focuses on the students' learning process, improves their ability to use English and enhances their professional ability.

Comparison of Students Participating in Classroom Activities

Through implementing open discussion teaching in the formative assessment system, the data of classroom performance recorded in two semesters showed that in the second semester of sophomores (i.e. middle year); namely, the second semester of the 2010-2011 academic year, after the full implementation of the experimental teaching and formative assessment system, the number of participants, participation in the breadth, and participation quality (classroom performance quality of individuals or groups including accuracy, comprehension and oral communication skills, respectively represented by four grades: excellent, better, good and pass) had been greatly improved, as shown in Table 1.

Table 1: Comparison of students participating in classroom activities and quality.

Item Class	Number of participants		Participation in the breadth		Participation quality							
	Term 1	Term 2	Term 1	Term 2	Term 1				Term 2			
					E	B	G	P	E	B	G	P
A	45	197	39	49	3	2	8	32	17	29	15	136
B	43	174	38	60	2	5	32	4	19	40	34	81
C	48	132	37	48	0	2	7	39	13	20	2	97
D	48	158	32	55	0	2	11	35	11	18	16	113

Comparison of English Application Ability and Professional Ability of Students

The implementation of the formative assessment system in the experimental teaching was to train students with a strong ability in foreign language in communication skills, teamwork skills, thinking ability and problem-solving ability. From the questionnaire and students' scores in CET-4 in June 2011, it was found that the improvement of students' English

application ability was proportional to professional ability, such as communication skills, teamwork skills, thinking ability and problem-solving ability.
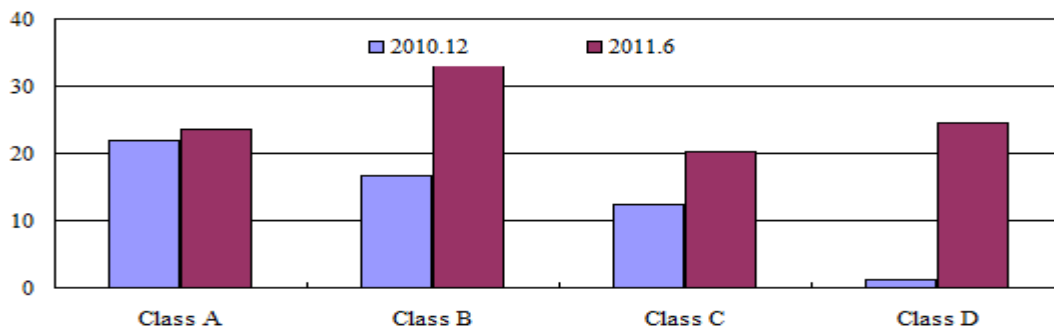

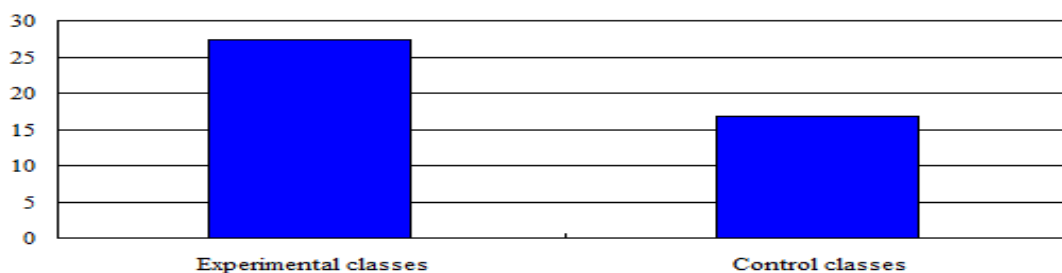Figure 2: Passing rates for experimental classes in two semesters.

Figure 3: Scores for experimental classes and control classes in CET-4 in June 2011.

Figure 4: Scores for four (4) classes in the College of Mechanical and Electrical Engineering in CET-4 in June 2011.
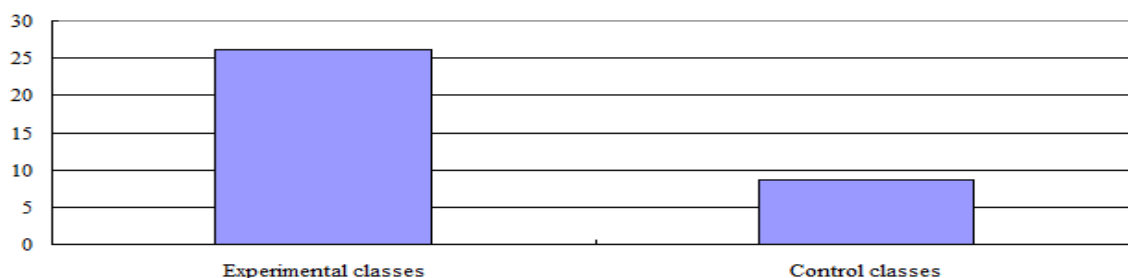

Figure 5: Scores for four (4) classes in the College of Resources and Environmental Engineering in CET-4 in June 2011.

In Figure 2, the passing rates for four classes in CET-4 in the second semester (June 2011) were significantly higher than in the first semester (December 2010), the most significant are Class B and Class D, respectively 15.4% and 23% higher. The two classes actively participated in classroom interaction, which demonstrated that students' classroom activity participation helped improve scores in CET-4, and also enhanced their related professional ability, such as communication skills, teamwork skills, thinking ability and problem-solving ability.

It also showed that the passing rate of Class A reached 33.4%. However, the overall scores of experimental classes were higher than those of the control classes. This was very marked for the two classes in the College of Mechanical and Electrical Engineering where the one-off passing rate of experimental classes was 17.8% higher than those of the control classes. Thus, it could be concluded that student-centred open discussion teaching was conducive to the application of a formative assessment system, and this helped improve students' basic skills in English and its application.

Analysis of Questionnaire Results

The aim of the survey was to understand students' assessment of the formative assessment system and the impact of their attitudes and effects of open-ended, student-centred teaching on independent learning. In the questionnaire, if students' scores in section A reached 60% (the scores of each section in the survey were unknown to students), the assessment system was successful.

The survey was based on the student network. Participants in the survey were 112 students from the experiment classes (72 students did not participate). There were 112 valid questionnaires, and the results are shown in Table 2 and Table 3.

Table 2: Students' scores in the questionnaire.

Class Section	Class A	Class B	Class C	Class D	Total	Percentage %
A	25	18	10	15	68	60.71
B	13	12	4	9	38	33.93
C	0	4	2	0	6	5.36

The results in Table 2 and Table 3 show that students in section A reached 60.7%. A total of 91 students (81.3%) supported and actively participated in the implementation of the assessment system and experimental teaching, and 58.9% of them perceived the assessment system and teaching mode as *beneficial* to improving their communication skills and collaboration capabilities; 53.6% and 74.1% of them considered the formative assessment system and student-centred open-ended teaching obviously better than terminative and traditional teaching.

Thus, it could be demonstrated basically that the formative assessment system and student-centred open-ended discussion teaching were successful, recognised, supported by the students, feasible and effective. In addition, it was also shown by the questionnaire that students' independent learning abilities had been enhanced. A total of 63.4% of students responded that they spent more time in English learning after the implementation of the assessment system and experimental teaching; 84.2%, acknowledged that the assessment system and experimental teaching helped increase their enthusiasm to participate in classroom activities; 62.5% of them considered the assessment system and experimental teaching helpful to improving their independent English learning. As for the question, *whether the assessment system and experimental teaching help you to plan English learning*, 35.6% of students chose *great help* and 54.8% *help*.

Table 3: Score section of each question.

Question Choice	1	2	3	4	5	6	7	8	9	10
A	91	17	41	34	40	66	60	83	54	46
B	20	71	53	70	61	39	49	25	49	61
C	1	23	18	8	11	7	0	2	8	5

Through questionnaire and classroom observation, the experimental teaching of student-centred open discussion further confirmed the validity of the formative assessment system, the most outstanding feature of which was to promote and foster students' independent learning ability. This helps them learn to study, think, co-operate and communicate in the process of task completion. They can independently determine their own learning goals, objectives, content and methods. They can assess themselves through a series of assessment types, enhancing learning efficiency and achieving the best learning outcomes [7].

CONCLUSIONS

Theoretically, the formative assessment system of multimedia-based college English teaching has an unsurpassed advantage as compared to the traditional assessment system, but inevitably it has some limitations, as does the traditional system. In the process of curriculum assessment, the role of formative assessment should be fully affirmed, but measures also must be taken to overcome some unfavourable factors. Based on related theories and the practice of formative assessment at home and abroad, three recommendations for improvement are proposed as follows.

First, formative assessment implementation is not only the teachers' concern. It must be by consensus of the teaching administration staff in universities, colleges and departments to establish sound assessment mechanisms, more complete systems of teaching management and credit management.

Second, the incentive mechanism should be improved to solve the problems that constrain teachers in implementing formative assessment, such as course teaching quality cognisance and teacher performance appraisal, and specific incentive systems established to encourage teachers to carry out the curriculum reform of formative assessment, so that

teachers consciously adopt formative assessment into classroom teaching design and optimise the classroom teaching mode.

Finally, teachers should be encouraged to participate in the formative assessment reform in teams. The teaching team consisting of a curriculum group or task group can provide the platform by which teachers can share experiences and explore teaching problems, thus, promoting the smooth development of reforming the formative assessment system of multimedia-based college English teaching.

ACKNOWLEDEGMENT

REFERENCES

1. Black, P. and William, D., Assessment and classroom learning. *Assessment in Educ.*, 1, 7-11 (1998).
2. Liu, R. and Manchun, D., On the research of college English teaching in China. *CELEA Journal*, 27, **4**, 112-116 (2004).
3. Cao, R., Zhang, W. and Zhou, Y., Application of formative assessment in writing in English for non-English majors in China. *Foreign Language Teaching*, 5, 82-87 (2004).
4. Liu, Q., Hu, Y. and Zhang, J., Construction and verification of formative assessment system for engineering college students' oral English. *Foreign Language Teaching*, 1, 57-61 (2011).
5. Yorke, M., Formative assessment in higher education: moves towards theory and the enhancement of pedagogic practice. *Higher Educ.*, 4, 477-501 (2003).
6. Xi, G., Promoting learners' independence in college English teaching with formative assessment. *J. of Xian Foreign Language College*, 12, **2**, 66-68 (2004).
7. Cao, C. and Wang, J., Testing methods of formative assessment in college students' English application ability. *Foreign Languages and Literature*, 5, 154-156 (2009).