Construction and Feedback Research on Spoken English Blended Learning Mode Based on E-Learning Platforms and SPSSAU Data Analysis

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Abstract. E-learning platforms allow learners to use computers, mobile phones, tablets, and other handheld tools to study online. Tencent online homework platform, Wisdom Tree online learning platform and WJX questionnaire platform are widely used by Chinese teachers in recent years. But few studies integrated these e-learning platforms together to conduct spoken English blended learning. This study aims to construct a spoken English blended learning mode based on the e-learning platforms as well as research on learners' feedback. Data collected from a survey among undergraduate students were analyzed by SPSSAU system. The results of this study indicated that the majority of students hold positive attitude towards this blended learning mode. One-way anova showed no significant gender difference on its improvement of learners' English oracy. Pearson correlation analysis indicated that increasing the frequency of output training was beneficial to improve learners' oral fluency, accuracy as well as their attention and learning efficiency in class. Group work and individual presentation were conducive to enhancing learners' participation enthusiasm according to linear regression analysis, whereas they would not affect learners' oral fluency or accuracy improvement.

Keywords: e-learning platforms · blended learning mode · Spoken English · construction · feedback

1 Introduction

With the development of the Internet, China's education has been promoting distance education in the past decade. Online virtual classrooms are used to realize remote video teaching, electronic document sharing and conference holding, so that teachers and students can form a teaching and learning interaction on the network.

According to the China's *"Teaching Guide for Undergraduate English Majors in Colleges and Universities"*, the teaching objectives of Spoken English course are as follows: The course aims to cultivate students' ability of oral expression and communication in English. Through the course, students should master the pronunciation and

intonation of standard English, and adapt to the pronunciation of common variants of English; Students should master the functional language required for oral communication, and gradually develop the habit of thinking in English; use oral communication strategies to promote language communication and intercultural communication; apply free expression and discussion on specific topics with critical thinking skills.

The development of society sets higher requirements on English listening and speaking for college students. However, due to the limited class hours and the large scale of classes, students have no opportunity to fully practice their spoken English. Therefore, it is always difficult to improve their spoken English [6]. College Spoken English class has been faced with difficulties in effectively improving students' speaking skills for a long time [3]. The blended teaching model conforms to the development process of China's education informatization [5]. How to update teaching concepts, innovate teaching methods, explore a new and efficient college spoken English teaching model is a subject worthy of serious consideration [9].

Due to the impact of the epidemic, the use rate of e-learning platforms in China began to rise rapidly since 2020, such as Tencent Meeting App and Ding Ding Live-streaming Classroom App. In recent years, many teachers and scholars have applied online platforms to spoken English teaching [3–6, 9, 10].

Tencent online homework platform (abbreviated as "Tencent platform"), Wisdom Tree online learning platform (abbreviated as "Wisdom Tree platform") and WJX online questionnaire platform (abbreviated as "WJX platform") are the platforms that have been widely used by Chinese teachers in recent years. However, few people integrated these three platforms together to conduct spoken English blended teaching and researched on the learning feedback.

Therefore, based on the above three platforms, this paper takes Spoken English course in Software Engineering Institute of Guangzhou (SEIG) as an example, which is to construct a spoken English blended learning mode from the perspective of Scaffolding Instruction, as well as study students' learning feedback. This blended learning mode was implemented to four classes, a total of 135 students by 11 weeks of teaching. At the end of the semester, teacher used WJX online questionnaire platform to study students' learning feedback. This paper elaborates from the following aspects: scaffolding and innovative approach, construction of Spoken English blended learning mode, research on students' learning feedback, data analysis and conclusions.

2   Scaffolding Instruction and Innovative Approach

Vygotsky [7] put forward the theory of "Zone of Proximal Development" (ZPD) in the 1930s, which is the gap between the existing actual and potential levels of development. The "actual level of development" refers to an individual's ability to perform tasks independently. "Potential level of development" refers to an individual's ability to complete a task with the help of external forces. Vygotsky believed that the most effective learning takes place in the ZPD. Only with appropriate support in the ZPD can learners learn new knowledge and develop new skills. The auxiliary mediators in the process of reaching the potential development level are "scaffolding". "Scaffolding" can be interactive scaffolds based on interpersonal relationships such as parents, peers and teachers, or instrumental

scaffolds based on Apps and multimedia, which is usually in the form of demonstration, decomposition of complex tasks, providing guidance, prompting, encouragement and feedback evaluation [6].

Production-oriented Approach (POA) was proposed by the POA project group which was led by Qiufang, Wen from China Foreign Languages Education Research Center, Beijing Foreign Studies University. This teaching theory has Chinese characteristics [8]. POA absorbs excellent foreign language teaching practices and theories, which has carried out many teaching practices after nearly ten years of reflection. The teaching process of POA consists of three stages: motivating, enabling and evaluation. All these three stages need to be mediated by teachers. The mediating roles are guiding, designing, and scaffolding. According to POA, "scaffolding" plays an important role in this Chinese innovative theory.

Scaffolding Instruction is a kind of teaching strategy based on Vygotsky's theory of ZPD, which establishes the Scaffolding conceptual framework for complex problems, so that learners can climb along the Scaffolding gradually to construct the meaning of complex concepts.

Scaffolding Instruction consists of the following steps.

Step 1: Build scaffolds. Build a conceptual framework around the current learning topic according to the requirements of the ZPD.

Step 2: Get into the context. Introduce students to a certain context of questions (a node in the conceptual framework).

Step 3: Explore independently. Students explore independently. The exploration involves: identifying the various attributes related to a given concept and placing the various attributes in order of their importance.

Step 4: Cooperative learning. Group consultations and discussions.

Step 5: Effect evaluation. The evaluation of the learning effect includes students' individual self-evaluation and the learning group's individual learning evaluation.

3   Construction of Spoken English Blended Learning Mode Based on E-Learning Platforms

This learning mode is divided into macro model construction and micro model construction.

3.1   Macro Model with E-Learning Platforms

Macro model takes Tencent online homework platform, Wisdom Tree online learning platform and WJX questionnaire platform as the framework to construct the blended learning mode for Spoken English I in SEIG. See Fig. 1.

Macro model construction runs by four sections:

Section 1: Assignments and tasks distribution, teachers' feedback to students based on Tencent platform before class. (Website: https://im.qq.com/index).

Section 2: Implementation of online learning, learning resources sharing and online learning system monitor by teachers based on Wisdom Tree platform. (https://www.zhihuishu.com).
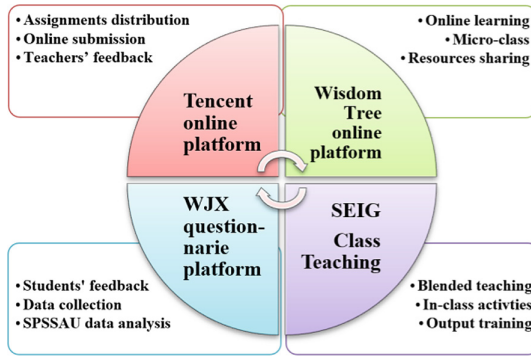
Fig. 1. Macro Model of Spoken English Blended Learning with E-Learning Platforms

Section 3: Blended teaching and output tasks based on scaffolding. (SEIG).

Section 4: Feedback research on students' learning effect of Spoken English I based on WJX platform with data analysis and cloud computing to improve the teaching model afterwards. (https://www.wjx.cn).

3.2   Micro Model from the Perspective of Scaffolding

Micro model construction is based on scaffolding instruction under the macro model, which demonstrates and further refines the teaching process of blended learning mode for Spoken English in SEIG. Micro model includes the following processes.

Section 1: Before Class - Assignments and Tasks Release (Tencent platform).

Step 1: Students read the spoken English learning materials online, record and submit them to Tencent platform. (Scaffolding 1: Input of vocabulary and corpus).

Step 2: Students make a 1-min statement on the topic specified by teacher and record it. The recording would be submitted to Tencent platform. (Scaffolding 2: Input and output of corpus and knowledge).

Step 3: Teacher evaluates and comments on students' assignments through Tencent platform. (Feedback 1).

Section 2: In-class - Spoken English Blended Teaching (Wisdom Tree Platform).

Step 1: Warm-up and individual output.

During the first 5 min of class, the assigned students would give a speech without notes in class. The speech topic is the topic statement of assignment before class.

Step 2: Build scaffolds.

Review what students have learned from last lesson and introduce the new topic for this lesson. (Scaffolding 3).

Step 3: Get into the context.

Guide students into a certain topic and context. Present questions and Chinese expressions related to the topic, arousing students' interest and thinking.

Step 4: Explore independently.

First, teacher demonstrates the videos, site-dramas, and audios on Wisdom Tree platform. The learning materials include videos of micro-lessons, Family Album USA,

OMG English and so on. Then guide students to analyze key words and expressions from online resources independently.

Step 5: Build new scaffolds.

Teacher helps students review, summarize, and take notes of the corpus. Afterwards, the teacher present the questions and Chinese expressions related to the topic and context again, let students try to express or retell in English within a limited time. (Scaffolding 4).

Step 6: Cooperate in learning.

Teacher assigns the task of group situational dialogue. Students engage in group negotiation, discussion, and practice (3–5 min of preparation in groups of two or three students).

The topic of the situational dialogue is based on the content learned in class and the oral topic assigned by Tencent platform before class. In addition, in order to enable students to apply the corpus and knowledge in various aspects, teacher would provide the scaffolding of Chinese templates. While in the last quarter of the dialogue, students are expected to have a free talk according to the context.

Step 7: Production and feedback.

Student groups are expected to perform the situational dialogues in class. Teacher provides guidance, comments, and encouragement to students. Excellent groups are expected to be recorded and demonstrated to Wisdom Tree platform, setting as good models for students to learn. (Feedback 2).

Section 3: After class - New Assignments and Tasks Release (Tencent platform and Wisdom Tree Platform).

Teacher would release new assignments and tasks for the next round. Students' new recording would be submitted to Tencent platform again. Teacher would share the relevant materials of this lesson on Wisdom Tree platform for revision and practice.

4 Research on Students' Learning Feedback with WJX Online Questionnaire Platform

The teaching objects of this study are students in the second semester of freshman year in SEIG. Students have not taken formal spoken English classes in the previous semester, who have limited time to report or present in English in other English classes. Most of the students reported that they had few opportunities to practice spoken English for a long period before, and many of them could not even make complete situational dialogues and daily topic statements in English.

Based on WJX platform (https://www.wjx.cn), this paper studies students' learning feedback after taking blended learning mode of Spoken English 1 in SEIG.

The following research questions are addressed:

1. Does this learning mode show a significant gender difference on the improvement of learners' oracy?
2. To what extent would frequency of oral practice, activities of cultural comparison and output desire correlate with learners' oracy?

3. What are learners' comments on this learning mode and suggest for improvement?

The teaching schedule of Spoken English I was 17 weeks, with one lesson per week (80 min/lesson). Week 9 was mid-term revision. Week 15 was final revision. Week 16 and 17 were for the final oral exam. In addition, due to public holidays and the pandemic, two weeks were suspended.

Therefore, the blended learning mode was implemented for 11 weeks from March 2022 to June 2022. The topics were divided into two categories: topics of daily life and topics of social focus.

5 Results and Discussion

5.1 Date Collection

In order to study the teaching mode of learning feedback, after a semester of teaching, students were investigated through WJX online questionnaire platform by teacher (https://www.wjx.cn/vm/hYvkCRZ.aspx).

The overall structure of the questionnaire is derived from the concept of Zheng, Bi [1], which is combined with the revised one of Tao, Cheng [2].

According to the actual research needs, Cheng's questionnaire adjusted the question order, reintegrated it and expanded the dimensions of the questionnaire into four dimensions: the impact on students' oral expression, the impact on students' classroom participation, the impact on students' learning autonomy and the analysis of students' overall adaptability to POA. The questionnaire was designed in the form of 5-point Likert Scale (1 = fully disagree, 2 = disagree, 3 = uncertain, 4 = agree, and 5 = fully agree).

Compared with Cheng's study, 4 classes were taught in this study, and the questionnaires were distributed at the end of the term. A total of 112 questionnaires were collected, 110 of them were valid, including 16 males and 94 females. The effective rate of the questionnaires is 98.2%. Moreover, this study not only implemented offline teaching based on scaffolding and POA, but also integrated Tencent platform and Wisdom Tree platform to carry out blended learning mode. Afterwards, the feedback of students' learning was analyzed with cloud statistical methods and cloud computing by WJX platform.

5.2 Results of SPSSAU Data Analysis

SPSSAU system was used for data collection and data analysis to verify the reliability and validity of questionnaire. The Cronbach α coefficient value of the questionnaire was 0.973, indicating that the reliability of the research data was of high quality. In this study, KMO and Bartlett test was used to verify the validity of the questionnaire data. The KMO value was 0.916, indicating that the research data had good validity, which was suitable for information extraction.
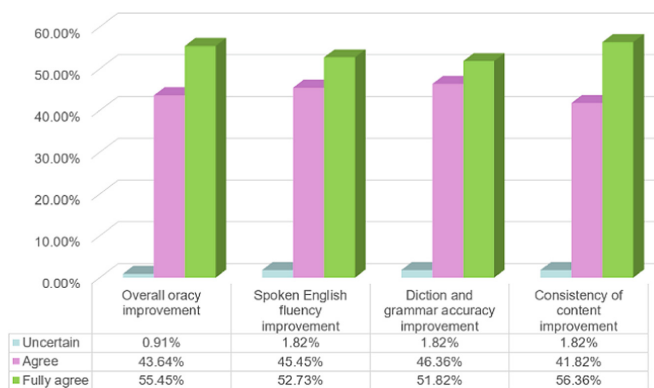
Fig. 2. Feedback on Students' Oracy Improvement

Assessment of Students' Oracy Improvement

Students provided their own feedback on the learning mode, including the overall oracy of spoken English, the fluency of spoken English and the consistency of spoken English content with the given topic. See Fig. 2.

According to the data, in terms of overall oracy improvement, a total of 61 students "fully agree", accounting for 55.45%. The proportion of "agree" is 43.64%. For the improvement of spoken English fluency (abbreviated as "fluency"), 52.73% of students "fully agree", and 45.45% "agree". For the improvement of diction and grammar accuracy (abbreviated as "accuracy"), 51.82% of the students "fully agree", 46.36% of them "agree". Besides, no students chose "disagree" or "fully disagree" on the above four questions.

In this study, one-way anova was used to investigate gender difference on the improvement of three aspects: the improvement of overall oracy, the improvement of fluency, the improvement of accuracy. See Table 1.

Table 1. Anova Results of Gender Difference on Oracy Improvement

	Gender(M ± SD)		F	p
	Male *(n = 16)*	Female*(n = 94)*		
Improvement of overall oracy	4.56 ± 0.51	4.54 ± 0.52	0.020	0.888
Improvement of spoken English fluency	4.56 ± 0.63	4.50 ± 0.52	0.183	0.669
Improvement of spoken English diction and grammatical accuracy	4.44 ± 0.63	4.51 ± 0.52	0.251	0.617
*$p < 0.05$ **$p < 001$*				

According to the results, gender difference of spoken English oracy does not show a significance (p > 0.05), which means that the above three aspects showed consistency in different gender.

Assessment of the Correlations Between Teaching Activities and Different Factors
In view of research question 2, this paper used the correlation analysis to study correlations between teaching activities and different factors. See Table 2.

According to the results of Table 2, the value of correlation between "Frequency of Output Practice Increased" (abbreviated as "FO") and "Improvement of fluency" was 0.573. The one between FO and "Improvement of accuracy" was 0.623; The one between FO and "Students being more focused in class" was 0.663; The one between FO and "Improvement of classroom learning efficiency" was 0.513. Besides, FO and the above four aspects show significance at 0.01 level, indicating that there was a significant positive correlation between FO and the above four aspects.

In addition, in order to further analyze the influence of different factors on the improvement of fluency, accuracy as well as to study the direction and degree of the influence, the linear regression analysis was conducted in this paper. See Fig. 3.

This study takes "improvement of fluency" as the dependent variable, which shows the results as follows: the regression coefficient value of FO was 0.230 (t = 3.403, p = 0.001 < 0.01); The regression coefficient value of "understanding cultural comparison in class teaching" (abbreviated as "cultural comparison") was 0.508(t = 5.078,p = 0.000 < 0.01); The regression coefficient value of "Oral topic is close to reality so that students desired to express in English" (abbreviated as "output desire") was 0.272 (t = 2.838, p = 0.005 < 0.01). Results showed that the above three independent variables would have significant positive impacts on the improvement of fluency.

Nevertheless, the regression coefficient value of "Improvement of students' participation enthusiasm from group and individual presentation" (abbreviated as "participation enthusiasm") was −0.035(t = −0.420, p = 0.675 > 0.05), which means that this independent variable would have no influence on the improvement of "fluency".

Besides, R-square value of the model was 0.641, showing that the above four independent variables can explain 64.1% of the change in the improvement of "fluency".

Moreover, Fig. 3 also shows the linear regression analysis between the above four independent variables and "accuracy".

Table 2. Results of Pearson Correlation Analysis of FO

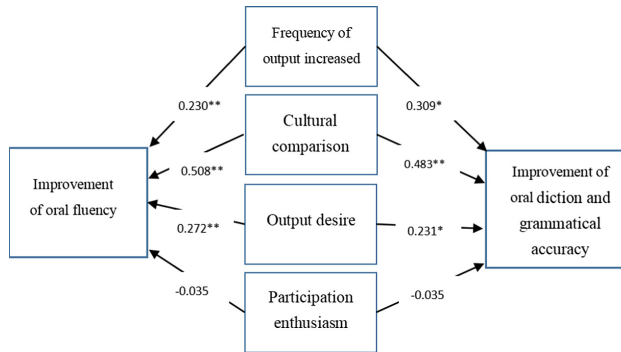|	Frequency of Output Practice Increased
Improvement of fluency	0.573**
Improvement of diction and grammatical accuracy	0.623**
Students being more focused in class	0.663**
Improvement of classroom learning efficiency	0.513**
*p < 0.05 **p < 0.01*	

Fig. 3. Linear Regression Analysis among "Fluency"/"Accuracy" and Four Independent Variables

The study took "accuracy" as the dependent variable, which demonstrated the regression coefficient values as follows respectively: FO was 0.309 (t = 4.617, p = 0.000 < 0.01); "cultural comparison" was 0.483 (t = 4.877, p = 0.000 < 0.01); "output desire" was 0.231 (t = 2.429, p = 0.017 < 0.05), all of which showed that the above three independent variables would have significant positive impacts on the improvement of "accuracy".

However, regression coefficient value of "participation enthusiasm" was −0.035 (t = −0.433, p = 0.666 > 0.05), indicating that it would not have an impact on the improvement of "accuracy".

R-square value of the model was 0.648, showing that the four independent variables could explain 64.8% of the change in the improvement of "accuracy".

Feedback on the Improvement of Teaching Model

In this study, options with the highest and lowest mean scores are compared.

The two options with highest mean scores were: "topics in class are helpful for daily speaking" (M = 4.627), "I prefer the speaking activities this term" (4.600). This indicated that students hold a relatively positive attitude towards the practicability of the course and the interest of oral English activities in class. See Fig. 4.

The three options with lowest mean scores were: "I would consider how to use them after speaking activities" (4.473); "The teaching methods could improve my awareness of selective learning on English learning materials" (4.473); "In the spoken demonstration section, I can present the topic from different aspects in class" (4.464). The data showed that the future teaching would still need to cultivate students' awareness of autonomous learning in spoken English as well as their ability in using corpus comprehensively.

According to this study, students put forward suggestions for future teaching. First, more online resources of native speakers are waiting to be replenished, which would make class teaching more authentic and international. Second, reserve more time for students' group cooperation and presentation in class. Third, teacher is expected to pay more attention to guiding students' English pronunciation correction and grammar errors, instead of only encouraging students but ignoring their mistakes.
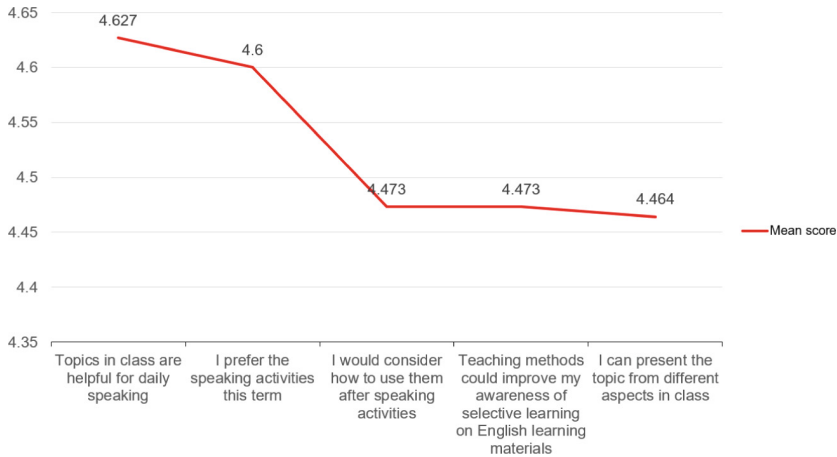
Fig. 4. Mean Scores Comparison of Two Highest Options and Three Lowest Ones

6 Conclusions

This paper constructed a blended learning mode for Spoken English based on different e-learning platforms, including Tencent platform, Wisdom Tree platform and WJX platform, which also researched on students' learning feedback with the concept of Scaffolding.

Bi [1] pointed out that students' participation in class was represented by three aspects: output practice, learning initiative and class attention. Sense of fulfillment includes three aspects: language output ability, critical thinking ability, and knowledge scope.

This study showed that the majority of students hold positive attitude towards this blended learning mode, in which the teaching activities are practical and interesting. According to data analysis, the teaching model had no significant gender difference on the improvement of students' oracy. Secondly, increasing the frequency of output training was beneficial to improve students' fluency and accuracy of expression, as well as improve their attention and learning efficiency in class. Thirdly, although group work and individual presentation are conducive to enhancing students' participation enthusiasm, which would not affect the improvement of fluency or accuracy. Finally, teacher was expected to provide more diversified oral practice, to make full use of the Wisdom Tree platform, to share more practical and targeted learning materials, so as to develop students' international vision, autonomous learning consciousness and comprehensive language skills.

There are some limitations in this study. The number of respondents is expected to be increased in future teaching. Since the survey was conducted after the final exam, not all questionnaires were withdrawn. Additionally, this study focused on the correlation and influence degree of different teaching activities. In the future, pretesting for students could be considered for a more accurate measurement of language proficiency. Limitations are expected to be improved in the next round of teaching.

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