

Effects of “SPOC and Flipped-classroom” Based Blended Teaching Strategy on English-Major Students’ English Language Achievements

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Abstract: This study focused on examining the effects of a “SPOC and Flipped classroom” based blended teaching strategy on the first-year English-major students’ achievements in five English language skills comparing with that of the traditional face-to-face classroom teaching strategy. The research adopted quantitative methodology, by which the quasi-experiment was conducted within a semester in two first-year English-major undergraduate classes. Intervention of the blended teaching strategy was performed in the experimental class, while face-to-face classroom teaching strategy in the control class. Findings of students’ overall achievements showed that the blended teaching strategy based on SPOC flipped-classroom was more effective in improving students’ achievements than the face-to-face classroom teaching. Findings of students’ achievements in each of the five English language skills showed that “SPOC and Flipped” based blended teaching strategy was effective in enhancing students’ listening, reading, translating and writing, but was not effective in speaking.

1. Introduction

1.1 Research Background and Problem Statements

The term blended learning originated in the business world in connection with corporate training [1], then was employed in higher education [2] and lastly it appeared in language teaching and learning. Bilgin (2013) points out that “teaching English blending face-to-face teaching with an online LMS (Learning Management System) can be beneficial over solely in-class teaching” [3]. Bonk et al. (2004) also suggested that further research and innovation in the blended learning arena would help sort out the key contributions, benefits, and impact area, therefore, it was quite necessary to evaluate whether blended teaching was effective in EFL instruction for its future development [4]. Effective assessment for learning was crucial to the success of blended learning approaches [5].

Achievements was the important indicator to examine blended teaching effectiveness. In an educational process, a student was said to be successful if he/she could complete the education program on time with good learning outcomes. That was, the achievement or learning outcomes were the realization of potential skills or capacity that a person had. Learning achievements or learning outcomes could be seen from students' mastery of the subjects they had taken. Studies on blended foreign language teaching has proved that blended teaching was effective in improving learners’ foreign language skills (e.g. [6]. Other findings also revealed that the impact of blended teaching on learners’ effectiveness was positively predicted by achievement, engagement, involvement, retention, and cognitive outcome [7]. Lin and Gong (2021) found in their study that there was a significantly relationship between the initiative of university students to participate in blended teaching courses and students’ expectation on their achievements in the course [8]. What’s more, students' perceptions of learning achievement provided additional insight, which enables educators to understand student perspectives about learning goals that were being met and which learning objectives could be improved. However, from the previous studies on the effects of blended teaching in EFL instruction, it was found that although blended teaching was advantageous in rising student retention, promoting learners’ motivation and saving costs in English language teaching, there were still inadequate studies on students’ academic achievements in language skills, especially on the achievements of first-year English-major students. The findings of the study only proved that students’ achievements expectation had significantly negative relationship with students’ initiative of participate in the blended teaching, but didn’t find the relationship between students’ actual achievements gotten from the blended teaching and their initiative to attend blended teaching courses. Additionally, studies on EFL blended teaching showed different results of blended learning (or teaching) concerning genders: some found no difference in blended learning achievements between male and female learners [9][10], or no difference in learning satisfaction among genders [11], while others found that males were more satisfied with blended learning than

females [12][13]. The results need to be verified by data from the study on EFL blended teaching for the first-year English-major students. Furthermore, it is assumed that students from urban and rural areas would perform differently in blended learning because of the different conditions of facilities and technology that are provided, but study on the effects of the regional background of students on EFL blended teaching effectiveness among English-major students has not been found in the research field yet.

1.2 Research Questions

The study aimed to examine the effects of the “SPOC and Flipped-classroom” based blended teaching strategy on the first-year English-major students’ achievements in blended teaching and learning environment.

According to the research aim, the following three research questions (RQ) were put forward: 1: What are the first-year English-major students’ achievements in English language skills by using “SPOC and Flipped-classroom” based blended teaching strategy? 2: What are students’ achievements in English language skills among male and female first-year English-major students by using “SPOC and Flipped-classroom” based blended teaching strategy? 3: What are students’ achievements in English language skills among urban and rural first-year English-major students by using “SPOC and Flipped-classroom” based blended teaching strategy?

1.3 Hypotheses of the Research

The According to the research questions and the research objectives, the research hypotheses are as follows:

H1: There is a significant difference in the levels of students’ total achievements by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

H2: There is a significant difference in the levels of achievements in listening by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

H3: There is a significant difference in the levels of achievements in reading by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

H4: There is a significant difference in the levels of achievements in translating by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

H5: There is a significant difference in the levels of achievements in writing by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

H6: There is a significant difference in the levels of achievements in speaking by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

2. Materials and Methods

According to the research objectives, the quasi-experiment was conducted in the current research based on the philosophy of the quantitative methodology.

2.1 Research Design of the Quasi-experiment

The quasi-experiment consists of a one-way two-groups design comparing students’ achievements between experimental and control classes. The whole procedures of the quasi-experiment are composed of the following three sessions:

1) The Grouping for the Quasi-experiment

In order not to affect the normal teaching order, Class A (32 students) and Class B (32 students) of the first-year English-major students, who participated in the course of Integrated English (1) undertaken by the researcher in 2022, in the School of Foreign Languages of the university were selected respectively as the control group and the experimental group. Class A (control group) and Class B (experimental group) had the same teaching content, teachers and teaching hours (200 minutes/week). Before the quasi-experiment, the students’ initial level was pre-tested by designing test questions, and independent sample T-test was conducted on the pre-test performance data to ensure that there was no significant difference between the initial level of students in the control group and the experimental group. The post-test data of the quasi-experiment are based on the students’ final exam scores.

2) The Conduction of the Quasi-experiment

The quasi-experimental research was conducted by implementing an intervention of “SPOC and Flipped classroom” based blended teaching strategy in Class B (experimental group), while in Class A (control group), the traditional face-to-face teaching strategy was continuously applied in the control class as before.

Before the quasi-experiment was carried out, the pre-test was conducted to get a general idea of the students’ English knowledge and abilities background in class A (control group) and Class B (experimental group).

Next, the intervening teaching using blended teaching strategy was conducted in the experimental class in the following stages. Firstly, the purpose of adopting “SPOC and Flipped classroom” based blended teaching strategy was to rearrange the teaching design for effectively integrate the online and face-to-face teaching and learning by make use of the online and offline teaching and learning technologies provided by the models of SPOC and Flipped classroom.

After the intervention in the quasi-experiment, the post-test was carried out in the control and experimental class. Participants’ performance on post-test was compared to find the difference.

3) Statistical Analysis on the Data of Tests in the Quasi-experiment

Since the data samples selected in this study are small and the scores are characterized by continuity, the statistical approaches could be used by the data analysis tool -- Statistical Product and Service Solutions (SPSS) 26.0 to analyze the data and find out whether there were significant differences in students’ English language achievements before and after the tests between the control class and the experimental class.

Independent Sample T-tests were used on the data analysis for getting results to verify the research hypotheses and to answer the research questions. Before and after the intervention, Independent Sample T-tests were implemented on the scores of pre-test and post-test for finding out whether the significant differences in students’ achievements between the two classes. Paired Sample T-tests were also adopted to make sure whether there were significant differences in students’ achievements respectively before and after the intervention within each of the two classes.

2.3 Population and Samples

The research design section follows the type of design with characteristics of the population and the sampling procedure. Within this target population, a sample was selected that consisted of first-year English-major students at an undergraduate university in China.

The samples of the research were selected from the population by using randomization and stratified sampling according to probability sampling techniques. The samples who voluntarily agreed to take part in the research included both male and female students who enrolled for the 2022 English-major courses in H University. Among the English-major courses, Integrated English (1) was the compulsory core course for the first-year English-major students provided in the first semester. These students participated in the course in order to improve their proficiency in the five basic English language skills -- listening, reading, speaking, writing and translating. In the quasi-experiment, there were 64 English-major students from the same Chinese university of Shandong province, who were divided into control class (Intact group, N=32, 6 males and 26 females) and experimental class (Intact group, N=32, 4 males and 28 females).

2.4 Data Collection Instruments

Tests implemented in the quasi-experiment were used as the instrument to collect the quantitative data of English-major students’ achievements of English language competence -- speaking, reading, listening, writing and translating -- before and after the blended teaching intervention in the course of Integrated English (1) for a semester (four months). The tests included pre-test and post-test.

The tests in the quasi-experiment were used to measure the first-year English-major students’ English language competence in the five basic skills. The selection of test papers was taken into carefully consideration from the perspectives of students’ situation of course schedule and school calendar.

2.5 Data Analysis

The quantitative analysis on the data collected through pre-test and post-test to examine the achievements of students was carried out by SPSS 26.0. The procedure of data analysis contains the following steps:

In order to ensure that there is no significant difference between the experimental class and control class regarding their language learning skills at the beginning of the study, an independent sample T-test was performed.

Specifically, the Data of the quasi-experiment were collected through pre-test and post-test and then were analyzed by performing Independent Sample T-test and Paired Sample T-test in SPSS 26.0, the analyzing results

such as maximum, minimum, mean, t-value, df, Sig.(2-tailed), mean difference and p-value were reported for verifying whether there was a significant difference in the effects of blended learning strategy and the traditional face-to-face teaching strategy on students' achievements. Independent Sample T-test on the quantitative data collected respectively through the pre-test and the post-test which were taken before and after the intervention session was used for verifying whether there was any difference in students' achievements in both the control class and the experimental class.

3. Results

In this section, the exhaustive data analyses aiming at answering the research questions and verifying the research hypotheses was performed, and the results of the statistical analysis were provided.

3.1 Descriptive Statistics of the Quasi-experiment

The central tendency and normal distribution of the statistics in pre-test and post-test carried out in control class and the experimental class of the quasi-experiment are shown in Table 3.1.1 and Table 3.1.2.

Table 3.1.1 Descriptive Statistics of the Pre-test

	Valid N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
EC	32	51	81	67.47	6.258	0.069	0.762
CC	32	56	81	68.19	6.631	0.293	-0.556

As is shown in Table 1, EC has a slightly lower mean (67.47) and a smaller standard deviation (6.258) compared to CC, which has a mean of 68.19 and a larger standard deviation of 6.631. As for the skewness and kurtosis, The skewness of the experimental class is 0.069. A positive value indicates a right-skewed distribution, and a negative value indicates a left-skewed distribution. In this case, the value is close to zero, suggesting a nearly symmetrical distribution. The kurtosis of the experimental class is 0.762, positive value indicates heavier tails compared to a normal distribution, and a negative value indicates lighter tails. A value close to zero suggests a distribution similar to a normal distribution. The positive value of skewness of the control class is 0.293, indicating a slight right-skewed distribution, but the skewness is not substantial. The kurtosis of the control class is -0.556. The negative value indicates that the distribution has lighter tails compared to a normal distribution. The $|\text{skewness}| < 2$ and the $|\text{kurtosis}| < 7$ in both experimental and control classes, which means the data of pre-test the control class form a normal distribution.

Table 3.1.2 Descriptive Statistics of Post-test

	Valid N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
EC	32	61	87	75.72	5.887	-0.432	0.286
CC	32	41	89	65.41	10.121	-0.044	0.263

Seen from Table 3.1.2, scores of the experimental class has a higher mean (75.72) and a smaller standard deviation (5.887) compared with the scores of the control class, which has a mean of 65.41 and a larger standard deviation of 10.121. According to the statistics, The skewness of experimental class is -0.432. The negative value indicates a left-skewed distribution, meaning the tail is extended towards the left side of the distribution. The kurtosis of the experimental class is 0.286. The positive value indicates heavier tails compared to a normal distribution. The value is close to zero, suggesting a distribution similar to a normal distribution. The skewness of control class is -0.044. The skewness is close to zero, indicating a nearly symmetrical distribution for control class. The kurtosis of control class is 0.263. The value is close to zero, suggesting a distribution similar to a normal distribution. The $|\text{skewness}|$ is less than 2 and the $|\text{kurtosis}|$ is less than 7 for the statistics of both experimental class and control class in the post-test, which means the data of post-test in the experimental class and control class form a normal distribution.

3.2 Results and Findings for Verifying H1, H2, H3, H4, H5, and H6 involving Research Question 1

The results and findings from the quantitative data analysis of the Quasi-experiment was to answer the first research question (RQ1): "What was English-major students' achievements in English language skills by using SPOC flipped-classroom based blended teaching strategy?" and to verify the research hypotheses 1-6.

The dependent variable involved in the analysis was students' achievements in five English language skills, including listening, reading, translating, writing and speaking. The independent variables were two

different teaching strategies -- “SPOC and Flipped classroom” based blended teaching strategy and face-to-face classroom teaching strategy.

In order to ensure that there was no significant difference between the control group and the experimental group regarding their language learning skills at the beginning of the research, the pre-test was conducted synchronously in both experimental class and control class, and then a Independent Sample T-test was performed on the scores. The results are provided in Table 3.2.1.

Table 3.2.1 Independent Sample T-test of Achievements

Pre-test	EC (n=32)		CC (n=32)		Sig.(2-tailed)	MD	t
	M	SD.	M	SD			
	67.47	6.258	68.19	6.631	0.657	-0.719	-0.446

Through the Independent Sample T-test of the scores collected from the pre-test in the two classes, it was found that there were not any significant differences among the students of the both classes regarding their achievements in five language skills (listening, reading, translating, writing and speaking) ($t = -0.446, p > 0.05$). Inspections of the means indicate that the average pre-test scores of students in the two classes were almost at the similar level.

After the intervention sessions, the students in both classes received post-test. The major assumption of this step was figuring out there was significant difference between the two classes after the intervention was implemented in the experimental class; therefore, the Independent Sample T-test was performed to analyze the post-test scores collected from the two classes. The statistics including valid number of samples, mean, standard deviation, as well as the inferential statistics were provided as the result in Table 3.2.2

Table 3.2.2 Independent Sample T-test on Post-test

Post-test	EC (n=32)		CC (n=32)		Sig. (2-tailed)	MD	t
	M	SD.	M	SD			
	75.72	5.887	65.41	10.121	0.000 *	10.31	4.982

The results in Table 3.2.2 showed that the effect of blended teaching strategy on students’ overall achievements in English language skills was significantly different from that of face-to-face classroom teaching strategy on students’ achievements ($t = 4.982, p < 0.05$). Inspections of the two classes means indicated that the average post-test score of students learning in blended teaching designed based on the “SPOC and Flipped classroom” blended teaching strategy was significantly higher than the score of students learning in face-to-face classroom teaching designed on the basis of face-to-face classroom teaching strategy. The result verified H1: There is a significant difference in the levels of students’ total achievements by using SPOC flipped-classroom based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students. The result was consistent with the findings of Bilgin (2013) and Oweis (2018) that blended teaching could be helpful in improving students’ English language skills [14][15].

Furthermore, in order to make clear that whether there was significant difference in students’ achievements before and after the intervention session within the same class (respectively in the experimental class and in the control classes), two Paired Sample T-tests were conducted on the pre-test and post-test scores collected from the both classes. The results could be seen in Table 3.2.3 and 3.2.4.

Table 3.2.3 Paired Sample T-test of Control Class

Students’ Achievements	Pre-test of CC (n=32)		Post-test of CC (n=32)		Sig.(2-tailed)	MD	t
	M	SD.	M	SD			
	68.19	6.631	65.41	10.121	0.117	2.78	1.611

Results in Table 3.2.3 shows that there was no significant difference in students’ achievements between pre-test and post-test in the control class ($t = 1.611, p > 0.05$). Inspections of the two tests means indicated that the average score of students’ achievements had no significant improvement before and after the intervention of face-to-face classroom teaching strategy.

Table 3.2.4 Paired Sample T-test of Experimental Class

Students’ Achievements	Pre-test of EC (n=32)		Post-test of EC (n=32)		Sig.(2-tailed)	MD	t
	M	SD.	M	SD			
	67.47	6.258	75.72	5.887	0.000*	-8.250	-6.955

Seen from Table 3.2.3, the results showed that students’ achievements in pre-test was significantly different from the students’ achievements in post-test in the experimental class ($t = -6.955, p < 0.05$). Inspections of the two tests means indicated that the average score of students’ achievements in pre-test was significantly lower than that in post-test, which meant that students’ achievements was improved after the intervention of “SPOC and Flipped classroom” blended teaching strategy. The results shown in Table 3.2.3 and Table 3.2.4 verified H1 that there was a significant difference in the levels of students’ total achievements by using “SPOC and Flipped classroom” based blended teaching strategy compared to the traditional face-to-face classroom teaching strategy among English-major students.

In order to explore in-depth findings from the effects of blended teaching strategy on students’ achievements in different English language skills to verify H2, H3, H4, H5 and H6, further statistical analysis on the data was performed. The descriptive statistics and inferential statistics of Independent Sample T-test were conducted respectively on the scores of listening, reading, translating, writing and speaking in the pre-test and post-test between experimental and control class. The results were provided in Table 3.2.5 and Table 3.2.6.

Table 3.2.5 Independent Sample T-test on Pre-test

	Groups	N	Mean	SD	Sig. (2-tailed)	MD	t
Listening	CC	32	5.81	2.235	0.113	-0.94	-1.609
	EC	32	6.75	2.423			
Reading	CC	32	12.88	2.959	0.865	0.13	0.170
	EC	32	12.75	2.907			
Translating	CC	32	13.75	2.410	0.243	0.72	1.179
	EC	32	13.03	2.469			
Writing	CC	32	14.94	2.047	0.156	0.69	1.434
	EC	32	14.25	1.778			
Speaking	CC	32	20.81	2.494	0.809	0.12	0.242
	EC	32	20.69	1.512			

The purpose of the Independent Sample T-test on the pre-test was to ensure that there was no significant difference in students’ achievements of the five English language skill between the control and experimental classes before the intervention of teaching strategies. The results of Levene’s test of the pre-test scores of each skill among the control and experimental classes demonstrated that the variables satisfied the homogeneity of variance.

As was shown in Table 3.2.5, there were no significant differences in students’ achievements of five English language skills between the control class and the experimental class in the pre-test (listening: $t = -1.60, p > 0.05$; reading: $t = 0.170, p > 0.05$; translating: $t = 1.179, p > 0.05$; writing: $t = 1.434, p > 0.05$; speaking: $t = 0.242, p > 0.05$). This meant that before the intervention of the two teaching strategy, students’ English language skills in listening, reading, translating, writing and speaking were at the similar level in both the control class and experimental class.

Table 3.2.6 Independent Sample T-test on Post-test

	Groups	N	Mean	SD	Sig. (2-tailed)	MD	t
Listening	CC	32	4.25	2.627	0.010*	-1.625	-2.648
	EC	32	5.88	2.268			
Reading	CC	32	12.38	3.883	0.007*	-2.437	-2.780
	EC	32	14.81	3.084			
Translating	CC	32	13.63	3.998	0.000*	-3.062	-3.854
	EC	32	16.69	2.055			
Writing	CC	32	12.66	3.288	0.000*	-3.125	-4.905
	EC	32	15.78	1.475			
Speaking	CC	32	22.50	2.258	0.912	-0.062	-0.111
	EC	32	22.56	2.257			

Results in Table 3.2.6 showed that students’ achievements in listening in the experimental class was significantly different from that in the control class ($t = -2.648, p < 0.05$). Inspections of the two classes means indicated that the average listening scores of students learning in blended teaching using “SPOC and flipped-classroom” blended teaching strategy was significantly higher than the scores of students’ learning in traditional

face-to-face classroom teaching using face-to-face classroom teaching strategy. This finding verified H2, and was consistent of the findings of Aji (2017) in the research [16].

As for reading skills, the results in Table 3.2.6 showed that there was a significant difference in students' achievement in reading between the control class and the experimental class ($t = -2.780$, $p < 0.05$). The means of the two classes indicated that the average reading scores of students learning in blended teaching using "SPOC and flipped-classroom" blended teaching strategy was significantly higher than the scores of students' learning in traditional face-to-face classroom teaching using face-to-face classroom teaching strategy. The finding verified H3, and was consistent of the findings of [17][18] [19].

Seen from Table 3.2.6, statistics showed that there was a significant difference in students' achievement of translating ($t = -3.854$, $p < 0.05$) between the experimental class and the control class. Inspections of the means of the two classes indicated that the average translating scores of students' earning in blended teaching using "SPOC and flipped-classroom" blended teaching strategy was significantly higher than the writing scores of students' learning in traditional face-to-face classroom teaching using face-to-face classroom teaching strategy. This finding verified H4.

Results in Table 3.2.6 showed that students' achievement in writing in the experimental class was significantly different from that in the control class ($t = -4.905$, $p < 0.05$). The negative mean difference suggested that students' writing scores, on average, in experimental class was significantly higher compared to the scores in the control class. This finding verified H5, and the finding was also corroborated with the findings of [20] that students of the blended learning group significantly outperformed the control group in their writing performance.

As represented in Table 3.2.6, there was no significant difference of students' achievement in speaking between the two classes ($t = -0.111$, $p > 0.05$). The statistics indicated that students' performance in speaking in the experimental class where the "SPOC and Flipped classroom" based blended teaching strategy was implemented had no significant differences from that in the control class where the traditional face-to-face teaching strategy was carried out. This finding did not support H6 and it was not consistent with the findings of [21] that the students participating in the treatment of blended teaching and learning model were significantly improved in terms of English speaking ability compared with those received the conventional teaching model.

4. Discussion

The result of the quantitative data emphasized the effects of the "SPOC and Flipped classroom" based blended teaching strategy implemented in EFL instructions on the achievements of the first-year English-major students. The following major findings were derived.

4.1 "SPOC and Flipped classroom" based Blended Teaching Strategy was Effective in Improving Students' Overall Achievements

The effects of the "SPOC and Flipped classroom" based blended teaching strategy on the first-year English-major students' achievements was tested by comparing with those of the traditional face-to-face classroom teaching strategy. The results of students' overall achievements in English language skills indicated that the adoption of "SPOC and Flipped classroom" based blended teaching strategy as scaffolding led to the increase in English language achievements of the first-year English-major learners compared with those using the traditional face-to-face classroom teaching strategy. It implied that the "SPOC and Flipped classroom" based blended teaching strategy was more advantageous in helping Chinese EFL learners acquire both English language knowledge and improve English language skills than traditional face-to-face classroom teaching.

Therefore, when English language instruction was decoded by using blended strategies as the scaffolding in EFL teaching and learning, language learning would be easier for learners. The success of the "SPOC and Flipped classroom" based blended teaching strategy was due to two remarkable reasons: firstly, its effectiveness in leaning process of EFL, and secondly, its role in creating a different and more effective blended learning environment for students' learning context, collaboration, conversation and meaning construction in comparison with the traditional face-to-face classroom teaching strategy, both for the learners and teachers.

4.2 "SPOC and Flipped classroom" based Blended Teaching Strategy was Effective in Improving Students' English Language Skills of Listening, Reading, Translating and Writing

The findings in the further data analysis on the achievements respectively in the five English language skills provided different implications to the current blended teaching.

(1) Listening

According to [22], "Listening is so challenging that teachers need to think carefully about how to make our activities successful and our content interesting". The statement defined listening as the very important skill in the process of interpreting and understanding a foreign language. As listening was considered a way of

gathering information from other people, listening teaching should be helpful for helping students successfully accomplish the process. [23] suggested that learners need to develop the following skills: 1) learning to listen in a variety of ways, 2) adjusting the way they listen according to the text and the reason for listening, 3) recognizing the characteristics of spoken English, 4) using visual and textual cues to help them, 5) active listening - asking for repetition, clarification, etc., and 6) developing their background knowledge. The finding also implied that flipped classroom design of the listening teaching and learning and SPOC model used in the listening instruction was effective to cultivate the first-year English-major students' listening skills. Based on the "SPOC and Flipped classroom" based blended teaching strategy, as soon as the learning aims and listening tasks were assigned to students before each class, the assistance to students' online autonomous learning through online listening materials such as audio and video materials cited from the VOA, BBC and other listening resources database in the form of SPOC provided by the teacher. Then the in-class activities were carried out as problem-solving and evaluating stages in the face-to-face classroom teaching periods. With the cooperation between teacher and students, as well as between students and students. Finally, the evaluation of students' outcomes and performance of each listening practice would be given to the students in forms of evaluation and feedback after face-to-face class interactions.

(2) Reading

Based on the findings of this study, the scaffolding of "SPOC and Flipped classroom" based blended teaching strategy was beneficial to the improvements of EFL students' reading ability. Students' improvements in reading implied that the strategy that was used First of all, Flipped classroom design setting reading aims, assigning reading tasks, arranging the activities and evaluating the completion of reading tasks that initiated students' reading interests and motivation, maintained students' reading concentration and cultivated students' reading abilities through both online and offline paths. Therefore, SPOC could be served for students as the scaffolding of online reading learning with learning resources, teacher's guidance, self-assessments, peer assessments and teacher assessments.

The results of this study were consistent with those of previous studies. Alnoori and Obaid (2017) note that blended learning appears to be more effective than traditional methods because it has the flexibility to combine a range of techniques [24]. In addition, the technology used in blended learning environments can be promoted and moderated by teachers in the classroom to prevent the technology from being misused or used in ineffective ways. [18] also found that blended learning methods significantly improved the reading level of English learners. In addition, they also mention that blended learning can be used in a variety of different locations, not just in the classroom. Thus, students can develop their reading ability and improve their reading skills in a suitable place and at a convenient time, consistent with this study. A comparative study [25] examined basic reading skills, including skimming, scanning, finding topics, building an ambitious vocabulary, and overall reading comprehension. The MOODLE LMS was used to implement a blended learning approach and to treat the experimental group. Subsequently, there were differences between the experimental group and the control group in the adjusted mean scores of the four reading skills and overall reading comprehension, with the experimental group showing significant improvements. Similarly, research by [26] showed that although reading comprehension improved for all participants, those who used blended learning showed more significant development compared to those who learned using traditional methods.

(3) Translating

The results of the statistical analysis on students' achievements in translating showed a significant difference between the experimental and control classes ($m(C)= 13.63$, $m(E)= 16.69$, $MD= -3.06$, $t= -3.854$, $p<0.05$), which meant that students in the experimental class got higher scores than those in the control class. The finding indicated that "SPOC and Flipped classroom" based blended teaching strategy was more effective in improving students' translation skills when compared with the traditional face-to-face classroom teaching strategy. Translation teaching was an important part of English-major teaching in university, which had the same important status as listening, speaking, reading and writing. However, translation was also difficult for the first-year English-major students to learn, since they were not well prepared for the skill due to limited vocabulary, knowledge of inter-culture. Students needed more time, learning resources, learning activities during their learning procedure, as well as teachers' guidance, evaluation, and the interactions and collaborations with teachers and peers. Therefore, it was assumed that the traditional face-to-face classroom teaching could not provide enough the above-mentioned conditions for students in EFL translation teaching compared with blended teaching, and the findings of this part verified the assumption.

(4) Writing

Writing is considered as one of the most important language skills for second and foreign English language learners [27]. The importance of essay writing for students is supported by [28], who mentioned that students would need English writing skills ranging from simple paragraph and summary skills to essay writing and professional articles. In the same way, [29] emphasized that the writing skill was needed for taking notes, describing objects or devices and writing essays, answering written questions, writing their compositions, writing experimental reports, etc. Moreover, learners of English as a foreign language (EFL) in higher education had been required to write in English for various purposes, such as academic, practical and communicative purposes [30].

Use of blended instruction based on SPOC and flipped classroom as a strategy in this research was proved to be significantly more effective than using traditional face-to-face classroom writing instruction alone. As the intervention of “SPOC and Flipped classroom” blended teaching strategy, students in the experimental class could learning with the scaffolding of SPOC as their learning environment constructor that provided adequate learning materials, more guidance, comprehensive evaluation and feedback in the interventions with the teacher and peers. Flipped classroom offered students clear learning manuscript in goal-setting, preparation, knowledge acquisition, drills and assessments with online and offline activities. During the process, online instruction seems to be an important factor in enhancing EFL students' writing skills when only traditional classroom writing instruction was not effective in solving problems students confronted during their learning process. Blended teaching helped enhance students' writing ability and resulted in a significant improvement after the “SPOC and Flipped classroom” based blended teaching strategy intervention.

4.3 “SPOC and Flipped classroom” based Blended Teaching Strategy was Not Significantly Effective in Improving Students' English Language Skills of Speaking

The finding in this research was not consisted with some of the previous studies. [31] found that there was a significant improvement in oral communication skills of the student teachers of English after the treatment and they had a positive perception of the application of the blended learning. The similar finding was reported by [32][33][34] who found that the treatments applied for the blended learning had a significant effect on students' English listening and speaking, learning outcomes, and reading comprehension. Findings of Ginaya et al.'s research revealed that the students participating in the treatment of blended teaching was significantly improved in terms of English speaking ability, and the improvement was also supported by their increased learning motivation and interest [21]. There were various kinds of reasons that caused different development in students' EFL speaking abilities. [35] suggested that instrumental motivation and length of oral English study could influence students' speaking performance. The method of phonetic and oral teaching had an important influence on the motivation of oral learning. [36] also referred to students' learning motivation as one of the main factors affecting the improvement of oral English ability. Besides, language environment was also an influencing factor that affected students' speaking learning, because the traditional “teacher-centred” teaching environment affected and inhibited students' active participation in speaking learning activities. [37] found in the oral English teaching practice that blended learning, which combined the web-based teaching method with the traditional face-to-face teaching mode, integrated a variety of teaching equipment, and made language teaching more convenient. Besides the possible reasons mentioned in the previous studies, the reasons why different results were generated in this research could attributed to the following factors. One factor was the different samples in studies. The samples in the previous studies were non-English majors, while in this research were the first-year English-major students. The differences of the length of English speaking learning time and environment between English-major and non-English major students could lead to their different levels of speaking improvements. The other factor was the different strategies used in English speaking blended teaching. Although researchers in China and other countries have done numerous studies on the effects of blended teaching in EFL instruction, the “blended teaching” was still different based on different strategies, which could cause the different results in the studies.

5. Conclusions

The study had important practical significance to the application of blended teaching in EFL teaching. Firstly although previous studies have given suggestions on the importance of adopting strategies in EFL blended teaching, the specific measures have not been given yet. The study uncovered the relationship between blended teaching strategy and blended teaching effectiveness, therefore, practitioners could carry out EFL blended teaching by rearranging the elements of the teaching and learning procedures. Secondly, the study proposed the blended teaching strategy based on SPOC and Flipped-classroom measures, which explored the paths of integrating both online and offline instruction for EFL teachers to compensate the shortcomings of current EFL blended teaching that teachers have confronted in the aspects of online and offline teaching

resources, teaching methods, interactions, and evaluations. Thirdly, the study examined students' achievements and explored students' learning satisfaction with blended teaching strategy as the evaluation indicators of blended teaching effectiveness, which provided teachers a scaffolding in evaluating the EFL blended teaching effectiveness in specific class or course. Finally, this study examined the effects of a blended teaching strategy on first-year English-major students achievements and learning satisfaction, which was a worthy endeavor for reducing the difficulties in EFL blended teaching and enhancing EFL effectiveness for English major education, and could give implications to further blended teaching reform for English majors. The findings of the study also offered implications to decision-makers of Chinese education institutions to broaden the path of blended teaching reform in other disciplines.

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