Examining the Effects of "Small Private Online Course and Flipped-Classroom"-Based Blended Teaching Strategy on First-Year English-Major Students' Achievements

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Abstract: Blended teaching, characterized as a combination of online instruction and face-to-face teaching is effective in maintaining high student retention, promoting learners' motivation and saving costs in EFL teaching. However, as low learning efficiency can lead to a reduced performance related to students' blended learning, it is necessary to study the effectiveness of blended teaching. This study aims to examine the effects of the "SPOC and Flipped classroom"-based blended teaching strategy on first-year English-major students' achievements in five English language skills compared with those of the traditional face-to-face classroom teaching strategy. For this research, a quasi-experiment was conducted for one semester, employing an "SPOC and Flipped classroom"-based blended teaching strategy in two undergraduate classes for first-year English-major students. A total of 64 students majoring in English at a Chinese university in Shandong province participated in the quasi-experiment and were divided into the control class (N = 32, (intact group), with 6 men and 26 women) and the experimental class (N = 32, (intact group), with 4 men and 28 women). Intervention was performed in the experimental class, while a typical face-to-face classroom teaching strategy was employed in the control class. Findings of students' overall achievements showed that the blended teaching strategy based on the SPOC and flipped-classroom approach was more effective in improving students' achievements than face-to-face classroom teaching. Findings of students' achievements in each of the five English language skills showed that the "SPOC and Flipped"-based blended teaching strategy was effective in enhancing students' listening, reading, translating, and writing, but was not effective in speaking. Furthermore, students' genders and regional backgrounds were considered as moderating variables of students' achievements, and findings indicated that gender had no significantly positive effect on students' achievements in the blended teaching intervention. However, a significant difference in achievements between the students from urban and rural areas was observed, which indicated that regional background had significantly positive effect on students' achievements in blended teaching. The findings of the research implied that the implementation of well-designed blended learning that uses effective strategies could significantly improve students' achievements in English language skills, but that there would be different results among students of different skill levels and regional backgrounds. Moreover, as the quality of EFL blended teaching improves, students' academic performance will be enhanced.

Keywords: blended teaching strategy; SPOC; flipped classroom; English major; achievements

1. Introduction

The term "blended learning" originated in the business world in connection with corporate training [1]. It was later employed in higher education [2] and then in language teaching and learning. Blended teaching has been distinguished from other expressions. Regarding the application of the term to computer/web technology and face-to-face classroom teaching, it is sometimes referred to as "hybrid" or "mixed" [3]. The expression

"hybrid teaching", however, refers to "an approach to teaching that not only integrates technology in the teaching process but also combines students who are inside a physical classroom and students from online" [4] (p. 2), which means that not all students are involve in synchronous online and offline learning; instead, optimal methods are taken from both models. This kind of hybrid learning is not the teaching model referred to in this research. "Blended teaching", as addressed in this research, refers to the combination of both online and face-to-face classroom teaching methods, by which all students participate in both learning environments and activities [5]. Face-to-face classroom teaching refers to the traditional teaching model, in which teacher and students carry out the teaching and learning activities synchronously within the same time and space.

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". Effective learning assessments are crucial to the success of blended learning approaches [6]. Bonk et al. (2005) also suggested that further research and innovation in the blended learning arena would help determine the key contributions, benefits, and impact areas; therefore, it was quite necessary to evaluate whether blended teaching was effective in EFL instruction and should be developed in its future [7]. Blended teaching provides benefits to both teachers and students by facilitating communication and collaboration among students and teachers through social networking, increasing ease of use of course materials [8], decreasing physical class time, creating a student-based learning environment, producing an encouraging learning environment, providing flexible learning times and locations, promoting independent learning skills, and developing individualized course solutions [9].

Although blended teaching could be more advantageous in compensating for the shortages of both traditional face-to-face teaching and purely online teaching, and provide more time, space, and interaction opportunities for teachers and students, the results of some studies show that blended model was merely more effective in student retention, but no significant difference in students' achievements was found [10]. The results implied that blended teaching was not necessarily better than traditional face-to-face teaching in guaranteeing the effectiveness of EFL instruction. Furthermore, the results of a study on blended teaching among college English students [11] showed that the effects of blended teaching for freshmen still required a period of time to be obvious. According to some studies [12], the specific nature of learning faced by English-major students means that first-year English-major students face more difficulties in adapting to blended learning. The practice of blindly promoting blended teaching while ignoring the differences in regional, cultural, and verbal factors among English-major students even could cause "Learned Helplessness under Blended Teaching" [13], which refers to the sense of helplessness experienced by first-year English-major students under the blended teaching model. "Learned Helplessness under Blended Teaching" involves inner barriers, psychological fear, and other states, as well as lack of motivation, fuzzy orientation, and a low sense of identity, which could influence the inability of students to adapt to blended teaching [13].

Achievement is an important indicator to examine blended teaching effectiveness. In an educational process, students are considered to be successful if they can complete the education program on time with good learning outcomes. That is achievements are the realization of potential skills or capacity that students have. Learning achievements could be seen from students' mastery of the subjects they have taken. Studies on blended foreign language teaching have shown that blended teaching was effective in improving learners' foreign language skills [14]. Other findings also revealed that the impact of blended teaching on learners' effectiveness was positively predicted by achievement, engagement, involvement, retention, and cognitive outcome [15]. Lin and Gong 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 [16].

Additionally, some studies were carried out to evaluate the effects of gender on students' achievements in EFL blended teaching. Some researchers found that there was no significant difference in the achievements between male and female learners in blended teaching [17], some other researchers found that female students obtained significantly higher achievements than male students in EFL blended teaching environment [18]. The results need to be verified by data from the study on EFL blended teaching due to the findings of different blended teaching effectiveness among different disciplines.

Furthermore, according to the research findings of teaching conditions gap between urban and rural areas in China, the overall level of English teaching in rural areas is still relatively lower than that of the urban areas, and the gap is widening [19]. Students from rural areas have different starting points than their urban-based counterparts in English learning. This EFL educational gap between students from urban and rural areas will eventually affect students' further study and their development [20]. Other researchers found that there is a significant difference between college students from rural areas and college students from urban areas in their concept of mother tongue, and college students from rural areas have significantly higher level of concept of mother tongue than that among college students from urban areas [21]. Therefore, it is assumed that students from urban and rural areas would perform differently in EFL blended learning.

In order to solve the problems existing in the current EFL blended teaching in China, the research is conducted to examine the effects of an "SPOC and Flipped classroom"-based blended teaching strategy on the first-year English-major students' achievements in English language skills. "SPOC" was an abbreviation of "Small Private Online Course", which was originally proposed by Armando Fox in 2013 as a typical online teaching and learning paradigm in the "post-MOOC" era. In the expression, "Small" refers to the number of students generally ranging from dozens to hundreds. "Private", compared with "Open" in MOOC, means that only identified learners on campus have access to these resources and there exists a good level of course privacy [22]. SPOC places more emphasis on students having a complete and in-depth learning experience, which is conducive to improving the course completion rate. Teachers could set up and automatically regulate the teaching pace and course scoring management system of each course according to students' personal interests and preferences and actual needs. Flipped classroom teaching is a new teaching technology and method based on good network communication conditions in the 20th century. Originally, Lage et al. (2000) put forward the "Inverted Classroom" concept and defined it as "what traditionally happened inside the Classroom now happens outside the Classroom, and vice versa" [23] (p. 32). The concept involves students in more classroom activities, thus subverting the traditional classroom teaching schedule. The "Flipped Classroom" introduced by Baker (2016) emphasizes "understanding and application rather than recall; At the same time not sacrificing the presentation of factual knowledge; Students' having more control over their learning; Making students more responsible for their own learning; Providing more peer learning opportunities for students" [24] (p.9). Bishop and Verleger (2013) proposed the definition framework of flipped classroom and considered that flipped classroom consists of two parts, namely, interactive classroom activities guided by student-centered learning theory and the explicit instruction method guided by teacher-oriented learning theory [25]. This definition emphasizes the type of learning on which pre-class and in-class sessions are based and excludes classes that do not use video as learning material for extracurricular activities. Abeysekera and Dawson (2015) provided a general theoretical model for flipped classroom based on motivation theory and cognitive load theory. They believed that in flipped classroom, the feeling of competence, relevance, autonomy could improve learners' external and internal motivation, while customized expertise and self-paced learning can better manage learners' cognitive load [26].

1.1. Research Objectives and Research Questions

In the study, the "SPOC and Flipped-classroom"-based blended teaching strategy is implemented in the EFL blended teaching among first-year English-major students,

and the effects of the blended teaching strategy on the first-year English-major students' achievements in blended teaching and learning environment are examined. The following research objectives were put forward: 1. To examine the first-year English-major students' achievements in the English language skills of speaking, reading, listening, translating, and writing using an "SPOC and Flipped classroom"-based blended teaching strategy. 2. To examine the first-year English-major students' achievements among male and female first-year English-major students using an "SPOC and Flipped classroom"-based blended teaching strategy. 3. To examine the first-year English-major students' achievements among first-year English-major students from urban and rural areas using an "SPOC and Flipped-classroom"-based blended teaching strategy.

According to the research objectives, the following three research questions (RQ) are put forward. 1: What are the first-year English-major students' achievements in English language skills using an "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 using an "SPOC and Flipped classroom"-based blended teaching strategy? 3: What are the first-year English-major students' achievements in English language skills among first-year English-major students from urban and rural areas using an "SPOC and Flipped classroom"-based blended teaching strategy?

1.2. Hypotheses of the Research

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

H1. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements compared with the traditional face-to-face classroom teaching strategy.*

H2. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in listening compared with the traditional face-to-face classroom teaching strategy.*

H3. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in reading compared with the traditional face-to-face classroom teaching strategy.*

H4. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in translating compared with the traditional face-to-face classroom teaching strategy.*

H5. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in writing compared with the traditional face-to-face classroom teaching strategy.*

H6. *The "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in speaking compared with the traditional face-to-face classroom teaching strategy.*

H7. *Male students have significantly higher achievements than those of female students using the "SPOC and Flipped classroom"-based blended teaching strategy.*

H8. *Students from urban areas have significantly higher achievements than those of students from rural areas using the "SPOC and Flipped classroom"-based blended teaching strategy.*

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 (See Figure 1).
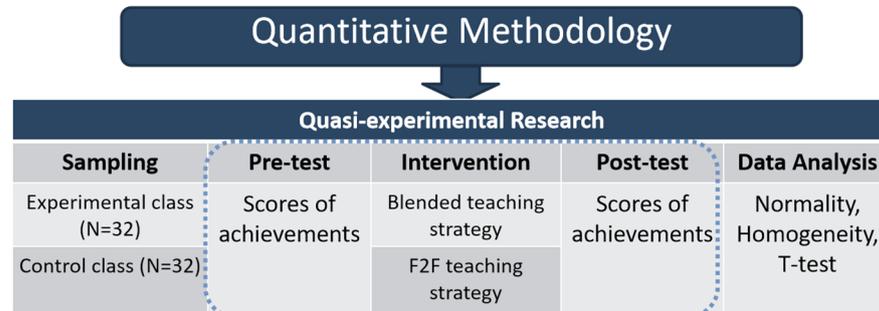
Figure 1. Research design.

2.1. Research Design of the Quasi-Experiment

A quasi-experiment was adopted in this research to examine the effects of "SPOC and Flipped classroom"-based blended teaching strategy to the first-year English-major students' achievements in five language skills, which consisted of a one-way two-group design comparing students' achievements between experimental and control classes. The rationale for using quasi-experiment in this study is that the essence of experimental design refers to the researcher's deliberate manipulation of or changes to the study situation of at least one independent variable in order to observe the effect of this on at least one response variable [27]. According to the research design of the quasi-experiment shown in Figure 1, the whole procedures of the quasi-experiment were composed of the following three sessions:

(1) The grouping of samples 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 participate in the course of Integrated English (1) undertaken by the researcher in 2022, in the School of Foreign Languages of the university, are selected, respectively, as the control group and the experimental group. Class A (control group) and Class B (experimental group) have the same teaching content, teachers, and teaching hours (200 min/week).

(2) The conduction of the quasi-experiment (in the dotted box): The quasi-experimental research is 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. Initially, both in the experimental class and the control class, the researcher clarifies the teaching and learning goals of the course and those of each unit to students before starting the instruction. The purpose of this section is to let the students know clearly what they are going to do in learning each session. The goals of the course include knowledge aims, ability aims, and quality aims, among which the knowledge aims and ability aims of improving students' English language proficiency in five basic skills were the main objects of the research. Then, detailed explanation is given to students in line with the purpose, function, and significance of the experimental research, so as to enable students to be aware of blended teaching and make preparation for the smooth implementation of the quasi-experiment.

Before the quasi-experiment, a pre-test was conducted to obtain a general idea of the students' English knowledge and ability background in Class A (control group) and Class B (experimental group). The students' total achievements including the five English language skills are tested by questions in the pre-test paper, and the normal distribution of the data is tested by the descriptive analysis tool of SPSS and the results are reported,

including minimum, maximum, mean, standard deviation, skewness, and kurtosis for illustrate the relevant information of the samples in the quasi-experiment to ensure the normality of the data and the reliability and validity of the inferential analysis results. Then, an independent sample *t*-test is conducted on the pre-test performance data to ensure that there is no significant difference between the initial level of students in the control group and the experimental group.

Next, the intervening teaching using the blended teaching strategy is conducted in the experimental class in the following stages. Firstly, "SPOC and Flipped classroom"-based blended teaching strategy is applied in the blended instruction to rearrange the teaching procedures for effective integration of online and face-to-face teaching and learning. The blended teaching and learning technologies provided by the "SPOC and Flipped classroom" approach are made full use of as the online and offline instruction are carried out. The teaching and learning session for each class include two instances (four periods) a week, amounting to 200 min in total. Then, the researcher provided the participants in the experimental class with an overview of the intervention in the course, including the teaching purpose, its procedures, and the general activities dealing with the course learning. A brief introduction of the term and model of "blended teaching", as well as the online learning platform including the features, functions, and usage, are provided for the learners in order to prepare them to successfully perform the activities that would be covered within the intervention sessions. The purpose of the introduction is to help the learners easily obtain access to the blended learning context by assuring them that the online platform is designed to be a user-friendly interface. Some concepts such as "SPOC" and "Flipped classroom" are introduced to the learners for their successful autonomous blended learning. Finally, the two different teaching and learning procedures based on the traditional face-to-face classroom teaching strategy and "SPOC and Flipped classroom" blended teaching strategy are carried out, respectively, in the control class and the experimental class.

After the intervention in the quasi-experiment, the post-test is carried out in the control class and experimental class. Participants' achievements in post-test are compared with those in pre-test to determine their respective differences.

(3) Statistical analysis on the data of tests in the quasi-experiment: Since the samples selected in this study are small and the scores are characterized by continuity, the statistical approaches could be used by a 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.

At the very beginning, the data are tested for homogeneity of variance to find out whether the variance difference between the two samples do not exceed the range specified by statistics between the two samples. If the variance of the two samples is not uniform, then the correction formula of mean comparison is used for processing [28].

Then, the normality of the data is also tested by the statistical method of frequency. According to literature, if the |skewness| > 2 or |kurtosis| > 7, then the data does not form a normal distribution [29,30].

Finally, *t*-tests are used on the data analysis for obtaining results to verify the research hypotheses and to answer the research questions. Before and after the intervention, independent sample *t*-tests are performed respectively on the scores of pre-test between control and experimental classes, as well as on those of post-test between the two classes to find out whether there are significant differences in students' achievements between the two classes. A paired-sample *t*-test is also adopted to test whether there are significant differences in students' achievements before and after the intervention, respectively, in the control class and the experimental class.

2.2. Blended Teaching Design Based on "SPOC and Flipped Classroom"-Blended Teaching Strategy

In the current research, the blended teaching procedures for the Integrated English (I) course is redesigned by implementing the "SPOC and Flipped-classroom"-based blended teaching strategy for deeply integrating the online and face-to-face instruction inside and outside of the classroom. The strategy is used to offer guidance, assistance, and resources both online and offline in blended teaching practice to the teacher and students through the techniques of SPOC and flipped classroom. The "SPOC and Flipped-classroom"-based blended teaching strategy is conducted during the teaching design in the following two aspects: To combine online and offline instruction by integrating SPOC with face-to-face classroom teaching in the flipped classroom teaching process for constructing a full time, all-round, fully guided, closed-loop learning environment for students. SPOC could enable teachers to provide abundant and appropriate learning materials, giving guidance, initiating interactions, and making evaluations of students with targeted online techniques. Flipped classroom could make up for the shortage of time and space in traditional classroom teaching, and at the same time can promote students' independent learning. On the other hand, this is to carry out instructional activities (both of teacher and students) with the scaffolding of "SPOC and Flipped classroom" techniques in the blended teaching procedures. The blended teaching design based on "SPOC and Flipped-classroom" blended teaching strategy is shown in Figure 2.
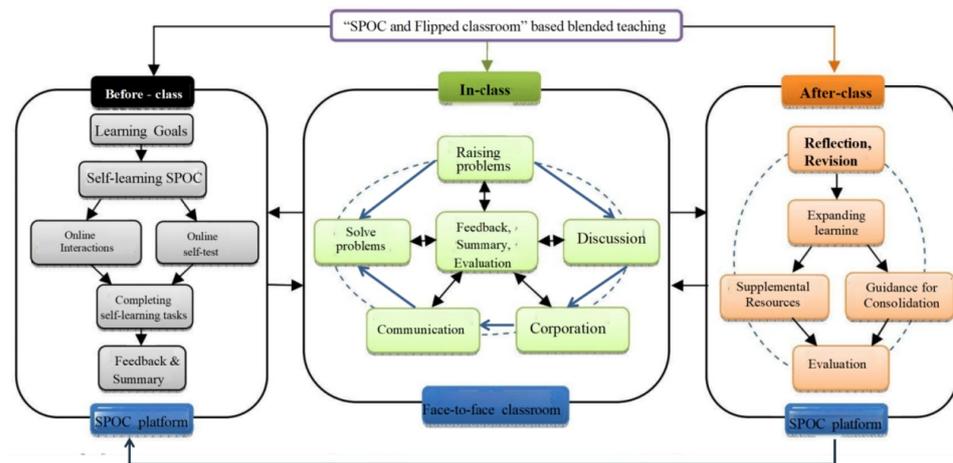
Figure 2. "SPOC and Flipped classroom"-based blended teaching design.

As is shown in Figure 2, the whole blended teaching process is divided into three sections—the before-class section, the in-class section, and the after-class section. Before the class, learning goals are released to students before the classroom teaching activities take place. This step is followed by students' self-learning based on SPOC, during which the interaction and self-test learning activities should be carried out by students under the teacher's guidance in the form of online tasks through the SPOC platform. Then, as students finish all the tasks, they receive feedback and a summary from their teacher. The SPOC techniques are performed through an online instructional platform named "Xue Xitong", which is a free integrated mobile teaching, mobile learning, mobile reading, and mobile social communication application developed by Beijing Century Superstar Information Technology Development Co., LTD. in 2016 in China. The functions of restricted class access, releasing videos, pictures, documents, teacher–students–peer interactions, monitoring learning process, and evaluating students' learning outcomes could help teachers in offering guidance and conducting monitoring for students' autonomous learning before and after traditional face-to-face classroom teaching. The present adaptation of SPOC is to create an autonomous learning environment for students, enabling improvements in their learning process.

In-class activities are carried out by both the teacher and the students. The problems raised at the beginning of the class would be solved through discussion, cooperation, and communication in teacher–student and student–student interactions. Each link of the loop (see "in-class" section in Figure 2) can be adjusted at any time based on feedback, summary, and evaluation from both teachers and students. This section is performed as face-to-face classroom teaching, and is composed of the "discussion", "cooperation", "communication", and "problem-solving" steps after students' autonomous SPOC learning of the course in the flipped classroom, which is the reverse of the traditional face-to-face classroom teaching procedures.

After-class teaching and learning happen as soon as the in-class teaching and learning aims are accomplished. This section is conducted as the reflection and revision of in-class teaching and learning process. According to the evaluation of students' performance in knowledge acquisition and skill management with the aids of online and offline teaching techniques, a teacher would provide more personalized self-learning supplemental learning resources and guidance to students for the consolidation of the knowledge and skills acquisition. Then, students' performance in this section would also be evaluated. The section would be carried out on the SPOC platform as well.

The three sections would not stop as the after-class section finishes, but would repeat to achieve the blended teaching and learning goals of the course.

Meanwhile, the traditional face-to-face classroom teaching strategy is implemented in the teaching procedures of the control class, which is also designed as three teaching stages: before-class, in-class and after-class. See Figure 3.
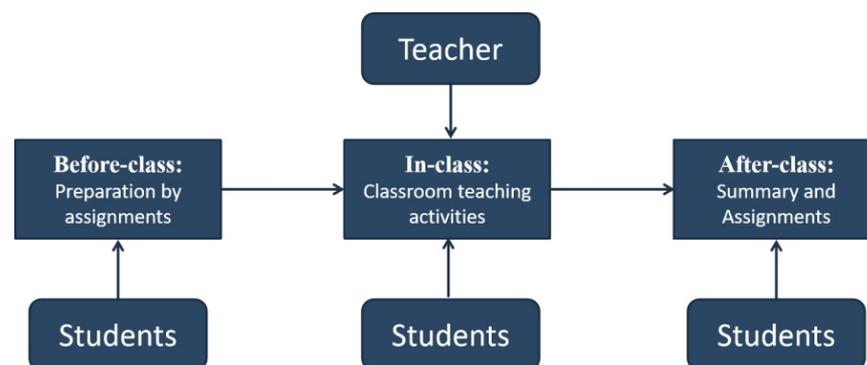
Figure 3. Traditional face-to-face classroom teaching design.

As Figure 3 shows, the traditional face-to-face classroom teaching approach was also carried out in three stages. The before-class stage refers to students' preparation for the subject of the new class (the "preview") according to the assignments given by the teacher before the teaching happens. The in-class stage includes all classroom teaching activities such as situation creating, knowledge interpreting, exemplifying, collaborating, and so on. The last stage involves the summary and assignments students had to work on after the class for reviewing the old knowledge and prepare for the new lesson (known as "review and preview"). The teacher only participates in the interactions with students in the in-class periods, and students have to complete the before-class and after-class tasks autonomously with the guides for assignments given by the teacher.

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 Shandong Province of China (see Figure 4).
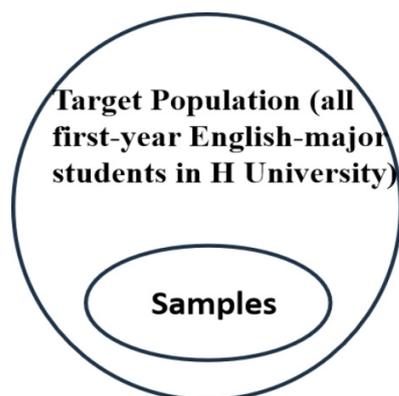
Figure 4. Population and samples.

The research sample was selected from the population using randomization and stratified sampling techniques according to probability sampling techniques. The samples who voluntarily agreed to take part in the research include both men and women who enrolled for the 2022 English-major courses in H University. Among the English-major courses, Integrated English (I) is the compulsory core course which begins in the first semester for first-year English-major students. These students participate in the course 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 in Shandong province, who were divided into the control class (N = 32, (intact group), with 6 men and 26 women) and the experimental class (N = 32, (intact group), with 4 men and 28 women).

2.4. Data Collection Instruments

The fundamental purpose of experimental design is to impose control over conditions that would otherwise cloud the true effects of the independent variables upon the dependent variables [6]. The quasi-experiment, in this research, is adopted to examine students' achievements by implementing both the "SPOC and "Flipped classroom" blended teaching strategy in the experimental class for the intervention, and the traditional face-to-face blended teaching strategy for the control class.

Testing is 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 (I) for a semester (four months). The tests include a pre-test and a post-test.

2.4.1. Composition of the Test Papers

Each of the two test papers is composed of five types of questions—listening, reading, speaking, writing, and translating. The questions involving the five different language skills are cited from two large-scale, high-stake tests for measuring Chinese students' English language competence—English Test for International Communication (ETIC) and College English Test Band 4 (CET4).

The five types of questions compose the pre-test and post-test papers to measure the first-year English-major students' five basic English language skills.

(1)   Listening

The listening section consists of five questions in the form of sentence completion. The listening materials is a conversation between two people in a context of social communication, which plays back for two times. The assessment of the listening test is based on the rating standard. Each correct answer receives 2 marks and scores are out of 10.

(2)   Reading

The reading section is composed of two passages, and each passage includes five multiple-choice questions. The assessment of the reading test is based on the rating standard. Each correct answer receives 2 marks and scores are out of 20.

(3)   Translating

The translating section consists of one task, which required participants to translate a short essay from Chinese to English. The assessment of translating test is based on accuracy, literal fluency and coherence in the lexical, syntactical and grammatical ranges, and the scores are out of 30.

(4)   Speaking

The speaking section consists of two parts in the form of self-presentation. Students obtained the requirements of the speaking test when they received the test papers to obtain a general idea of the contents and requirements. In the first part (self-introduction), students are required to briefly introduce themselves freely within 2 min. In the second part (individual long turn), students talk about a particular topic which allows them to present any points they wish to cover. The assessment of the speaking test is based on fluency and coherence, lexical resource, grammatical range and accuracy, pronunciation, and intonation, and the scores are out of 30.

(5)   Writing

The writing section consists of one task, which requires learners to write 120 words. In the task of the writing test, a situation is presented to the participants, and they are asked to write an essay providing information meeting the demands of the situation. The assessment of the writing test is based on task achievement, coherence and cohesion, lexical resource, and grammatical range and accuracy, and the scores are out of 20.

The pre-test and post-test were administered for the participants of both the experimental and the control group. The test papers were used in the pre-test and post-test to measure the participants' language proficiency of the five skills (listening, reading, speaking, writing and translating) before and after the intervention sessions. Each of the five raters scored one certain type of question (each of the five skills) included in the test papers independently according to the corresponding rating scale.

2.4.2. Reliability of the Test Papers

In order to test the reliability of the test, the researcher administered a pilot test on a sample which consisted of 30 first-year English-major students except for the samples, and the reliability was determined through Cronbach Alpha test. There were two tests (pre-test and post-test) and each of the tests took 110 min. The consistency coefficient was calculated using Cronbach Alpha and the result (pre-test: Cronbach's Alpha = 0.702; post-test: Cronbach's Alpha = 0.742). Thus, reliability of the test was deemed acceptable.

2.5. Data Analysis

The quantitative analysis on the data was conducted through SPSS 26.0. The procedure of data analysis contained the following steps.

Firstly, normality was tested to determine the normal distribution of the data. Students' total achievements including the five English language skills were tested in the post-test, and the normal distribution of the data was tested by the descriptive analysis tool of SPSS and the results are reported too, including minimum, maximum, mean, standard deviation, skewness and kurtosis for illustrate the relevant information of the samples in the quasi-experiment to ensure the normality of the data and the reliability and validity of the inferential analysis results of the post-test data. Then, an independent sample *t*-test was conducted on the post-test performance data to find out whether there was significant difference between in students' achievements both in the control group and the experimental group, and before and after the intervention.

Then, homogeneity of variance of the data was tested to ensure that the variance of two samples was homogeneous.

Finally, 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*-testwas 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 results, such as the maximum, minimum, mean, *t*-value, Sig. (2-tailed), mean difference, and *p*-value, were reported to verify whether there was a significant difference between the effects of the blended learning strategy and those of the traditional face-to-face teaching strategy on students' achievements. The independent sample *t*-test was used for verifying whether there was any difference in students' achievements between the control class and the experimental class, between male and female students, and between students from urban areas and students from rural areas. ANCOVA (analysis of covariance) was conducted for eliminating the influence of confounding factors (covariates of pre-test and the two teaching strategies) on the analysis index and identifying whether there was any statistically significant correlation between the independent and dependent variables following the intervention.

3. Results

In this section, the results of exhaustive data analyses are presented. These were performed to answer the research questions and to verify the research hypotheses, and the results of the statistical analysis were provided.

3.1. Descriptive Statistics of the Quasi-Experiment

The demographic information of the samples in the experimental class, including numbers, genders and regional backgrounds, was analyzed in descriptive statistics. The distribution of genders and regional backgrounds among sample of participants is shown in the following Table 1.

Table 1. Demographic information of the samples.

		Gender			
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	1	6	18.8	18.8	18.8
	2	26	81.2	81.3	100.0
	Total	32	100.0	100.0	
		Regional Background			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	7	21.9	21.9	21.9
	2	25	78.1	78.1	100.0
	Total	32	100.0	100.0	

Then, normal distribution tests of the statistics in the pre-test and post-test were carried out for the control class and the experimental class of the quasi-experiment, and the results are shown in Tables 2 and 3.

Table 2. Descriptive statistics of students' achievements in 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

EC = experimental class, CC = control class.

Table 3. Descriptive statistics of students' achievements in the 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

EC = experimental class, CC = control class.

As is shown in Table 2, the EC had 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. Kurtosis of the experimental class is 0.762 a 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 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. $|skewness| < 2$ and $|kurtosis| < 7$ were found in both experimental and control classes, which means the data of pre-test the control class form a normal distribution.

As can be seen from Table 3, the scores of the experimental class had a higher mean (75.72) and a smaller standard deviation (5.887) compared with the scores of the control class, which had 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, which 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. $|skewness|$ is less than 2 and $|kurtosis|$ 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. Quantitative Analysis Results and Findings

The quantitative analysis of students' achievements was conducted based on the quantitative data collected by tests. Scores of both the pre-test and the post-test in the controlled class and experimental class were analyzed by SPSS 26.0. Different statistical methods were used in the two phases to obtain the results, with the aim of elucidating the research questions and verifying the hypotheses.

The quasi-experiment was designed to find out the effect of the "SPOC and Flipped classroom"-based blended teaching strategy on students' achievements through a comparison with the effect of the face-to-face classroom teaching strategy; therefore, it should elucidate whether there was a significant difference between the independent variables ("SPOC and Flipped classroom"-based blended teaching strategy vs. traditional face-to face classroom teaching strategy) and the dependent variable (students' achievements).

In this case, the statistical analysis methods such as the independent sample *t*-test and the paired sample *t*-test were conducted on students' scores in pre- and post-tests to examine the effects of the two blended teaching strategies on students' achievements. In addition, the moderating effects of gender and regional background on students' achievements also were examined under the conditions of different teaching strategies being applied in EFL instruction.

3.2.1. 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 were derived in order to answer the first research question and to verify the research hypotheses 1–6.

The dependent variables involved in the analysis were students' achievements in five English language skills, including listening, reading, translating, writing and speaking. The independent variables were two different teaching strategies —the "SPOC and Flipped classroom"-based blended teaching strategy and the 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 an independent sample *t*-test was performed on the scores. The results are provided in Table 4.

Table 4. Results from independent sample *t*-test on pre-test scores.

	EC (n = 32)		CC (n = 32)				
Pre-test	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	67.47	6.258	68.19	6.631	0.657	−0.72	−0.446

Through the independent sample *t*-test on the scores collected from the pre-test in the two classes, it was found that they were not any significant differences among the students of the both classes in terms of 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 at an almost at the similar level.

After the intervention sessions, the students in both classes took part in a post-test. The major purpose of this step was figuring out that there was significant difference between the two classes after the intervention in the experimental class; therefore, the independent sample *t*-test was performed to analyze the scores collected from the two classes from the post-test. The statistics including a valid number of samples, mean, standard deviation, and the inferential statistics, are provided in Table 5.

Table 5. Results from independent sample *t*-test on post-test scores.

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

* *p* < 0.05.

The results in Table 5 show that the "SPOC and Flipped classroom"-based blended teaching strategy had a significantly positive effect on the participating first-year English-major students' achievements compared with the traditional face-to-face classroom teaching strategy. 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"-based blended teaching strategy is significantly higher than the score of students learning in face-to-face classroom teaching designed on the basis of the face-to-face classroom teaching strategy (EC(M) = 75.72, CC(M) = 65.41, $p < 0.05$). From the results, Hypothesis 1 is accepted. The result is consistent with the findings of Bilgin [6] and Oweis [31]: blended teaching could be helpful in improving students' English language skills.

The effective size of the pre- and post- test in both of the the control class and the experimental class was tested using the Cohen's d. See Table 6.

Table 6. Independent sample effect size.

		Normalized Quantitya	Point Estimation	95% Confidence Interval	
				Minimum	Maximum
pre-test CC-EC	Cohen d	6.447	0.111	−0.379	0.601
	Hedges revised	6.526	0.110	−0.375	0.594
	Glass Delta	6.258	0.115	−0.377	0.605
post-test CC-EC	Cohen d	8.280	−1.246	−1.778	−0.705
	Hedges revised	8.381	−1.230	−1.756	−0.696
	Glass Delta	5.887	−1.752	−2.398	−1.089

Denominator used when estimating the size of the effect. Cohen d convergence standard deviation. Hedges: The correction uses the convergence standard deviation plus the correction factor. Glass Delta: The sample standard deviation of the control group was used.

The results in in Table 6 show that the effective size of the pre-test in both the control and the experimental classes, as measured by Cohen's d shown, is d = 0.111, indicating a low effect. The effective size of the post-tests among the two classes, as measured by Cohen's d, is d = 1.246, indicating a high effect.

Furthermore, in order to determine whether there is significant difference in students' achievements before and after the intervention session within the same class (in the experimental class and in the control class, respectively), two paired-sample *t*-tests were conducted on the pre-test and post-test scores collected from the both the classes. The results can be seen in Table 7.

Table 7. Paired-sample *t*-test of control and experimental classes.

	Pre-test of CC (n = 32)		Post-test of CC (n = 32)				
	M	SD	M	SD	Sig. (2-tailed)	MD	t
Students' Achievements	68.19	6.631	65.41	10.121	0.117	2.78	1.611
	Pre-test of EC (n = 32)		Post-test of EC (n = 32)				
	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	67.47	6.258	75.72	5.887	0.000 *	−8.25	−6.955

* $p < 0.05$.

The results in Table 7 show that there is 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. The results show that students' achievements in the pre-test is significantly different from the students' achievements in the post-test in the experimental class ($p < 0.05$). Inspections of the two tests' means indicate that the average score of students' achievements in the pre-test was significantly lower than that in the post-test. This means that students' achievements was improved after the intervention with the "SPOC and Flipped classroom"-based blended teaching strategy. The results shown in Tables 4 and 5

verify H1: the "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements. This finding is consistent with that of Bañados' (2006) study on the improvement of Chilean undergraduate students' EFL language skills in a blended teaching environment [32].

In order to eliminate the influence of confounding factors (covariates of pre-test) on the analysis index and identify whether there were any statistically significant correlations between the independent and dependent variables following the intervention, results from the pre-test and post-test of students' achievements in the experimental class were also evaluated by a mixed-design ANCOVA (analysis of covariance). The results are shown in Table 8.

Table 8. ANCOVA on data of experimental class.

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2728.797 a	3	909.599	16.934	0.000
Intercept	1226.839	1	1226.839	22.839	0.000
Teaching Strategy "1blend2facetoface"	1633.151	1	1633.151	30.404	0.000 *
Pretest	457.726	1	457.726	8.521	0.005
Error	3222.953	60	53.716		
Total	324,612.000	64			
Corrected Total	5951.750	63			

* $p < 0.05$. a: R Squared = 0.458 (Adjusted R Squared = 0.431).

The analysis of covariance in Table 8 shows that the significance of the "Teaching Strategy" variable was less than 0.05. This suggested the presence of a significant difference ($\alpha = 0.05$) among the means of the achievement post-test results in the items of the overall achievement test in the five English language skills; these differences can be attributed to the teaching strategy variable ("SPOC and Flipped classroom"-based blended teaching strategy versus traditional face-to-face teaching strategy). This indicates the presence of an effect for the blended teaching strategy on the achievement of first-year English-major students' five English language skills.

In order to conduct an in-depth exploration of the findings about the effects of the 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 the independent sample *t*-test were conducted on the scores of the listening, reading, translating, writing, and speaking pre-test and post-test for the experimental and control classes. The results are provided in Tables 9 and 10.

The purpose of the independent sample *t*-test of the the pre-test results was to ensure that there was no significant difference in students' achievements of the five English language skills 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 is shown in Table 9, there are 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 means that before the interventions with the two strategies, students' English language skills in listening, reading, translating, writing and speaking were at a similar level in both the control class and the experimental class.

Table 9. Independent sample *t*-test on pre-test results.

	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			

Table 10. Independent sample *t*-test on post-test results.

	Groups	N	Mean	SD	Sig. (2-Tailed)	MD	t
Listening	CC	32	4.25	2.627	0.010 *	−1.63	−2.648
	EC	32	5.88	2.268			
Reading	CC	32	12.38	3.883	0.007 *	−2.43	−2.780
	EC	32	14.81	3.084			
Translating	CC	32	13.63	3.998	0.000 *	−3.06	−3.854
	EC	32	16.69	2.055			
Writing	CC	32	12.66	3.288	0.000 *	−3.12	−4.905
	EC	32	15.78	1.475			
Speaking	CC	32	22.50	2.258	0.912	−0.06	−0.111
	EC	32	22.56	2.257			

* $p < 0.05$.

The results in Table 10 show that the "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in listening compared with the traditional face-to-face classroom teaching strategy, (EC(M) = 5.88, CC(M) = 4.25, $p < 0.05$). From this finding, Hypothesis 2 is accepted, and this is consistent with the findings of Aji [33] in the research.

As for reading skills, the results in Table 10 show that the "SPOC and Flipped classroom"-based blended teaching strategy had a significantly positive effect on the first-year English-major students' achievements in reading compared with the traditional face-to-face classroom teaching strategy ($p < 0.05$, EC(M) = 14.81, CC(M) = 12.38). From the finding, Hypothesis 3 was accepted and this is consistent with the findings of Bolandifar [34], Ghazizadeh and Fatemipour [35] and Yudhana [36].

As can be seen from Table 10, statistics shows that the "SPOC and Flipped classroom"-based blended teaching strategy had a significantly positive effect on the first-year English-major students' achievements in translating compared with the traditional face-to-face classroom teaching strategy ($p < 0.05$, EC(M) = 16.69, CC(M) = 13.63). From this finding, Hypothesis 4 was accepted.

Results in Table 10 show that "SPOC and Flipped classroom"-based blended teaching strategy has a significantly positive effect on the first-year English-major students' achievements in writing compared with the traditional face-to-face classroom teaching

strategy ($p < 0.05$, EC(M) = 15.78, CC(M) = 12.66). From this finding, Hypothesis 5 was accepted, and the finding is also corroborated the findings of Hamouda that students of the blended learning group significantly outperformed the control group in their writing performance [37].

As is shown in Table 10, the results show that the "SPOC and Flipped classroom"-based blended teaching strategy had no significantly positive effect on the first-year English-major students' achievements in speaking compared with the traditional face-to-face classroom teaching strategy ($p > 0.05$). From this finding, Hypothesis 6 was rejected. This finding is opposite to the findings of Ginaya et al. [38], who found that the students participating in a blended teaching and learning model significantly improved in their speaking ability compared with those participating in a conventional face-to-face classroom teaching model.

3.2.2. Results and Findings for Verifying H7 Involving Research Question 2

The independent variables of the research were the two different teaching strategies—"SPOC and Flipped classroom"-based blended teaching strategy and the traditional face-to-face classroom teaching strategy. The dependent variable to be tested in the first research question was students' overall achievements in five English language skills. In addition, gender and regional background were involved in the research as moderating variables. In order to verify the seventh hypothesis, an independent sample *t*-test was performed twice to identify the effects of the moderating variable of genders on students' achievements. The statistics of both classes from the pre-test and post-test, in relation to gender, are shown in Table 11.

Table 11. Students' Achievements between Genders.

	M of EC (n = 6)		F of EC (n = 26)				
Students' Achievements in Pre-test (EC)	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	68.83	6.616	67.50	6.320	0.647	1.333	0.462
	M of EC (n = 6)		F of EC (n = 26)				
Students' Achievements in Post-test (EC)	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	78.67	7.737	75.04	5.333	0.178	3.628	1.380

M = male students; F = female students.

The independent sample *t*-test was performed to ensure that the results after the intervention would not be a product of the differences between the mean scores of the classes before conducting the experiment. As was shown in Table 11, the results show that male students did not have significantly higher achievements than female students before and after participating in the "SPOC and Flipped classroom"-based blended teaching strategy ($p > 0.05$). From this finding, Hypothesis 7 was rejected, and it is consistent with the finding of BENHADJ (2021) [39], that no significant gender differences in students' achievements were observed in blended teaching. Moreover, due to the difference in the number of male and female students, the effective size of the independent sample was tested. Results in in Table 12 show that the effective size of the independent sample, as measured by Cohen's d, is d = 0.625, indicating a medium effect [40].

3.2.3. Results and Findings for Verifying H8 Involving Research Question 3

Regional background was also considered in the research as a moderating variable to evaluate students' achievements before and after intervention through the "SPOC and Flipped classroom"-based blended teaching strategy in the experimental class for verifying the eighth hypothesis.

The scores of the pre-test and the post-test were analyzed using an independent sample *t*-test through SPSS 26.0, and the results are shown in Table 13.

Table 12. Independent sample effect size.

		Normalized Quantity	Point Estimation	95% Confidence Interval	
				Minimum	Maximum
Pre-test	Cohen d	6.361	−0.026	−0.914	0.862
	Hedges revised	6.526	−0.026	−0.891	0.840
	Glass Delta	6.320	−0.026	−0.914	0.862
Post-test	Cohen d	5.803	0.625	−0.281	1.522
	Hedges revised	5.953	0.609	−0.274	1.483
	Glass Delta	5.333	0.680	−0.233	1.581

Denominator used when estimating the size of the effect. Cohen d convergence standard deviation. Hedges: The correction uses the convergence standard deviation plus the correction factor. Glass Delta: The sample standard deviation of the control group was used.

Table 13. Students' Achievements between Regional Backgrounds.

Students' Achievements in Pre-test (EC)	Urban (n = 7)		Rural (n = 25)				
	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	67.71	5.376	67.40	6.583	0.909	0.31	0.314
Students' Achievements in Post-test (EC)	Urban (n = 7)		Rural (n = 25)				
	M	SD.	M	SD	Sig. (2-tailed)	MD	t
	79.71	4.386	74.60	5.831	0.040 *	5.114	2.146

* $p < 0.05$.

This independent sample *t*-test conducted on the pre-test is to ensure that the results before the intervention would not be attributed to the differences between the mean scores of the classes before conducting the experiment. From the statistics shown in Table 13, the scores of students from urban areas showed no significant differences when compared with those of the students from rural areas in the pre-test ($p > 0.05$). The results of post-test scores show that students from urban areas have significantly higher achievements than those of students from rural areas participating in the "SPOC and Flipped classroom"-based blended teaching strategy ($p < 0.05$, urban (M) = 79.71, rural (M) = 74.60). From this finding, Hypothesis 8 is accepted.

Due to the difference in the number of students from urban areas and students from rural areas, the effective sizes of the independent sample data in the pre-test and the post-test were tested. The results are shown in Table 14.

Table 14. Independent sample effect size.

		Normalized Quantity	Point Estimation	95% Confidence Interval	
				Minimum	Maximum
Pre-test	Cohen d	6.360	0.049	−0.789	0.887
	Hedges revised	6.525	0.048	−0.769	0.865
	Glass Delta	6.583	0.048	−0.791	0.885
Post-test	Cohen d	5.572	0.918	0.041	1.780
	Hedges revised	5.716	0.895	0.040	1.735
	Glass Delta	5.831	0.877	−0.005	1.742

Denominator used when estimating the size of the effect. Cohen d convergence standard deviation. Hedges: The correction uses the convergence standard deviation plus the correction factor. Glass Delta: The sample standard deviation of the control group was used.

As is seen in Table 14, the effective size of the independent sample, as measured by Cohen's d, is d = 0.918, indicating a high effect [40].

4. Discussion

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

4.1. The "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 were tested through a comparison with the effects among students participating in a traditional face-to-face classroom teaching strategy. The results of students' overall achievements in English language skills indicate that the adoption of the "SPOC and Flipped classroom"-based blended teaching strategy as scaffolding led to an increase in English language achievements among the first-year English-major learners compared with those using the traditional face-to-face classroom teaching strategy. The result implies that the "SPOC and Flipped classroom"-based blended teaching strategy is more advantageous in helping Chinese EFL learners acquire both English language knowledge and improve English language skills in comparison with traditional face-to-face classroom teaching.

In order to eliminate the pretest differences in performance and identify the statistical significance of the difference according to the variable of teaching strategies, the analysis of covariance was used. The analysis of covariance suggested that the presence of a significant difference between the means from the achievement post-test in the items of the achievement test in English language skills was attributable to the teaching strategy variable (blended teaching versus face-to-face). This indicates the presence of an impact for the blended teaching strategy on the achievement of the first-year English-major students.

Therefore, when English language instruction was decoded using blended strategies as the scaffolding in EFL teaching and learning, language learning became 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 conducting the leaning process of EFL; 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 the teachers. The "SPOC and Flipped classroom" approach was used as scaffolding in the blended teaching of Integrated English (I), which created an effective learning environment and enabled the students to better access skills of meaning construction. Studies have shown that a good learning environment can provide learners with a variety of learning styles, rich course resources, convenient communication channels, and timely feedback and evaluation; these factors can motivate learners to be more actively involved in the course, and further promote their learning achievements and satisfaction [41].

4.2. "SPOC and Flipped Classroom"-Based Blended Teaching Strategy Has Significant Positive Effects on First-Year English-Major Students' English Language Skills of Listening, Reading, Translating, and Writing

The findings of the further data analysis on achievements in the five English language skills have different implications for the current blended teaching approach.

The significant difference observed from the statistical analysis results of listening, reading, translating and writing between the experimental and control class show that the first-year English-major students have significantly better performance in the English language abilities of listening, reading, translating, and writing from participating in the "SPOC and Flipped-classroom"-based blended teaching strategy in comparison with the traditional face-to-face classroom teaching strategy. From the significant results of higher scores of the four language skills in the experimental class, we can derive that the "SPOC

and Flipped classroom"-based blended teaching strategy, used as the scaffolding in blended teaching, had significantly positive effects in improving students' English language skills of listening, reading, translating, and writing.

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. 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 [42]. Based on the "SPOC and Flipped classroom"-based blended teaching strategy, as soon as the learning aims and tasks were assigned to students before each class, support becomes available for students in their online autonomous learning, through online learning materials such as audio and video materials 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. Additionally, this strategy enables cooperation between the teacher and the students, as well as among students themselves. Finally, the evaluation of students' outcomes and performance of each listening practice is delivered in the form of evaluation and feedback after face-to-face class interactions. In this way, students' subjective initiative can adjust for exploratory study and learning, and they build an overall grasp of what they have learned.

4.3. The "SPOC and Flipped Classroom"-Based Blended Teaching Strategy Has No Significantly Positive Effects on First-Year English-Major Students' Achievements in EFL Speaking

According to the results of students' achievements in the speaking skill, no significant difference was found between the experimental class and the control class ($p > 0.05$). This finding indicated that the "SPOC and Flipped classroom"-based blended teaching strategy had no significant effect on the first-year English-major students' achievements of speaking in EFL blended learning.

The finding in this research was not consistent with the findings of some previous studies. Kirgoz (2011) found that there was a significant improvement in oral communication skills of the student teachers of English after a blended strategy and they had a positive perception of the application of the blended learning [43]. Similar findings have been reported by Yang et al. (2013) [44], Hung (2015) [45], and Alshumaimeri and Almasri (2012) [46], who found that blended learning had a significant effect on students' English listening and speaking, learning outcomes, and reading comprehension. The findings of Ginaya et al.'s research (2018) revealed that the students participating in the treatment of blended teaching significantly improved in their English-speaking abilities, and the improvement was also supported by their increased learning motivation and interest [37]. There are various reasons that can lead to different developments in students' EFL speaking abilities. The finding of the present study is contrary to the findings of Ginaya et al. (2018) [37], who found that the students participating in the blended teaching strategy were significantly improved in terms of their English-speaking ability compared with those participating in the conventional teaching model. Tang (2005) [47] suggested that the instrumental motivation and duration of oral English studies could influence students' speaking performance, and that the method of phonetic and oral teaching had an important influence on the motivation of oral learning. Wang (2007) also referred to students' learning motivation as one of the main factors affecting the improvement of oral English ability [48]. In addition, the language learning environment was found to be an influencing factor that affected students' speaking learning, because the traditional "teacher-centered" teaching environment affected and inhibited students' active participation in speaking learning activities. Zhang (2017) [49] used an oral English teaching practice that utilized blended learning—combining a web-based teaching method with traditional face-to-face teaching modes, integrated a variety of teaching equipment, and made language teaching more convenient. In addition to the possible reasons mentioned in the previous studies, the different results that were generated in the present study could be explained by the following factors: One factor is the different samples in studies. The samples in the previ-

ous studies were non-English-major students, while in this research they were first-year English-major students. The differences in the duration of English-speaking learning, and the environment between English-major and non-English major students, could lead to their different levels of speaking improvements. The other factor is the different strategies used in English-speaking blended teaching. Although researchers in China and other countries have conducted numerous studies on the effects of blended teaching in EFL instruction, "blended teaching" is still different, utilizing different strategies, which could cause different results in different studies.

4.4. Gender Has No Significantly Moderating Effect on the First-Year English-Major Students' Achievements in Their EFL Blended Learning

Statistical analysis on the scores of female and male students from the experimental class was conducted to examine students' achievements after the intervention of the "SPOC and Flipped classroom"-based blended teaching strategy and to find out whether there was significant difference between the achievements of male and female students. The results indicated that although male students outperformed female students in their achievements test (m(M) = 78.67, m(F) = 75.04, MD = 75.04), no significant difference was observed ($p > 0.05$). The finding of the data analysis showed that the "SPOC and Flipped classroom"-based blended teaching strategy had no significantly different effects on the achievements of male and female students in their blended learning process. This finding was not consistent with the findings of Al-Haq and Al-Sobh (2010); their study on the effects of a Web-based Writing Instructional EFL Program among Jordanian secondary students' English writing performance showed that there were statistically significant differences ($p < 0.05$) due to gender in favor of female students compared with males [50].

In the early 19th century, linguists found that there were significant differences between men and women in English learning. Since the 1960s, a lot of research has been conducted on the gender differences in sentence patterns, phonemes, and words between men and women and their causes, which has laid a theoretical foundation for English teaching. Although there have been a few studies that have systematically investigated the rate of second language acquisition (SLA) among females versus males, it is a generally accepted fact in language acquisition knowledge that females have a state advantage, initially at least. Some researchers have studied the influence of gender in students' SLAs and have reported that gender-related differences were incidental to their main focus. Farhady (1982) found in his study of 800 university students who were obliged to take a placement test that female students significantly outperformed male students in a listening comprehension test [51]. Eisenstein (1986) also indicated that female students significantly outperformed male studemts in a dialect identification task and in the extent to which they could recognize dialects of greater or lesser prestige [52]. Some other researchers found possible factors for the differences between genders in EFL learning. Ding et al. (2014) pointed that physical factors, learning motivation and will, learning interest, character difference, and learning strategy differences between male and female students were the causes of their different performances in EFL learning [53]. In this case, the finding that male students performed as well as female students in this research could be explained based on the following facts. Firstly, as the intrinsic motivation was slightly stronger, and the English learning motivation was closely related to the English score. The higher the intrinsic motivation, the better the English score [54]. The blended teaching approach implemented in this research has proved to be an effective way of motivating students in EFL learning, since "SPOC and Flipped classroom" were used as two effective teaching strategies in blended teaching to raise students' motivation; therefore, male students' motivation could be stimulated, and their achievements were consequently improved. Thus, the gap of achievements with female students was gradually narrowed down. Secondly, the use of "SPOC and Flipped classroom" techniques gave full play to the function of teacher-guided inquiry teaching mode, in which the integration of online and offline teaching resources, learning activities, teacher–student–peer interactions, and the informative evaluation approach led

to a "students-centered" EFL teaching concept. In this way, EFL instruction for the first-year English-major students could follow the principle of "teaching students in accordance with their aptitude", eliminating disadvantages caused by differences in students' learning interests and characters between genders. Therefore, the finding of this research did not find gender: as a moderating variable, to have any significant effect on the differences in achievements between male and female students.

4.5. Regional Background Has Significantly Moderating Effect on the First-Year English-Major Students' Achievements in Their EFL Blended Learning

It has been thought that a student's family background, especially their family's socioeconomic background and their academic performance has a considerable impact. The hypothesis that regional background would be a moderating variable in examining the differences in students' academic performances was derived from the consideration of the different academic performances brought by different information literacy levels among students from urban and rural areas in blended learning. In blended teaching and learning environments, costs should be taken into consideration, since the basic equipment for the online part of blended teaching includes a computer (desktop or laptop), internet access, and other facilities. The researchers supposed that the conditions of a blended teaching environment would be different among students from urban areas and from rural areas; this led to the theory that students from urban areas would have more positive blended learning conditions due to their regional background, that could enable them to better participate in computer-assisted learning or internet learning approaches from a younger age; meanwhile, students from rural areas might not have such good blended learning conditions, and their participation in computer-assisted learning or online learning would have begun at a later age than students from urban areas.

The statistical analysis method of an independent sample *t*-test was carried out on the scores of students from urban areas and from rural areas in the experimental class to verify the hypothesis. The results showed that there was a significant difference between the scores of students from urban areas and those of students from rural areas, and students from urban areas outperformed students from rural areas in their achievements. This finding indicated that the "SPOC and Flipped classroom"-based blended teaching strategy had significantly different effects on the achievements of students from urban areas and students from rural areas, and students from urban areas could obtain better achievements in blended learning. This finding verified the hypothesis that was set in the moderating effects of students' regional backgrounds on their achievements.

Tan and Liu found in their study that a family's economic conditions had a significant impact on a students' academic performance. Both high-income and middle–upper-income students have significantly higher academic performances than low-income students [55]. The reasons were determined to be mainly the following: First of all, the high economic income and the family's living standard could provide a strong material guarantee for children to receive a better education. Secondly, parents from families with poor economic conditions are usually busy making a living and have less time to take care of and supervise their children. In addition, some scholars have shown that a family's economic capital and social capital can help them to choose advantageous educational resources which would, in turn, benefit their children and assist them in achieving better academic results. Hanushek [56] found that the educational level of parents had a significant positive effect on the academic achievement output of their children: the higher the educational level of parents, the better the academic achievement of their children. The International Assessment of Student Ability (PISA) stated that the higher the social and economic status of a student's family was, the better their academic performance was. However, for a long time, scholars have mainly studied students at the basic education stage when analyzing the impact of students' socioeconomic background on their academic performance; few scholars have studied this issue exclusively at the higher education stage. This is especially the case in the new concept of "blended teaching". In conclusion, the differences existing

in the students' regional background between urban and rural areas had a significantly moderating effect on the first-year English-major students' achievements of English language skills in the EFL blended teaching using the "SPOC and Flipped classroom"-based blended teaching strategy. This could be attributed to potential reasons of economic levels that could support students' cost of blended learning, parents' educational levels that could influence students' information literacy, or levels of online education development in the regions where students grew up, among other possible reasons.

From the main findings and discussion, in the present study, we have provided referential evidence surrounding the use of the current EFL blended teaching approach for first-year English-major students. The findings here also benefit the understanding of the blended teaching practice of teaching other disciplines. It is important for teachers and educators in different disciplines to reflect on blended teaching during the exploration of achieving optimal results in their approaches to blended teaching through employing appropriate strategies within the scope of different courses, areas, samples, educational levels, and educational policies.

5. Conclusions

The discussion on the findings of the research questions provides pedagogical and theoretical implications for future EFL blended teaching practices among the first-year English-major students. Furthermore, the discussion led to the identification of some important designing principles that needed to be taken into consideration during the development of EFL blended teaching strategies. In this regard, pedagogical implications could be clarified through four perspectives: learners, teacher, course, and technology. Firstly, blended teaching should be designed in accordance with to individual students' differences and learning needs. Secondly, teachers' blended teaching ability and information-based teaching literacy should be improved. Thirdly, it is necessary to enrich online teaching resources and refine curriculum evaluation methods in EFL blended teaching. Finally, it is important to strengthen the techniques used to integrate face-to-face teaching and online instruction.

Because of certain delimitations in the scope of the study, some limitations included the samples participating in the research, the raters who assisted the researcher in conducting the study, and the real-time nature of data collection. The major limitation of the samples was that they were small for both the quasi-experiment and the survey. The samples in the survey were not randomly selected but purposefully selected according to the purpose of study. Additionally, the proportions of the genders and regional backgrounds among students were not balanced. The small size and imbalanced proportions of genders and regional background among the sample shed limit the universal validity and generalizability of the findings. A study with more participants must be conducted to gain more reliable and generalizable outcomes. Secondly, for scoring the tests that students took before and after the quasi-experiment, five raters were selected from among the EFL instructors who were teaching English-major courses at the university. The raters did not receive strict training before rating, but only had a rating standard for each section of the tests. Finally, it is challenging to gain deeper insights into the factors influencing students' achievements from the perspective of a quasi-experiment; the tests did not reflect the causes of the difference in achievements. Therefore, another survey needs to be conducted to explore the influencing factors of students' achievements in blended teaching.

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